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COLUMBIA RIVER ENTRANCE CHANNEL DEEP-DRAFT VESSEL MOTION STUDY.--ETC(U)

SEP 79 S WANG, C LEIDERSDORF, C BUTCHER

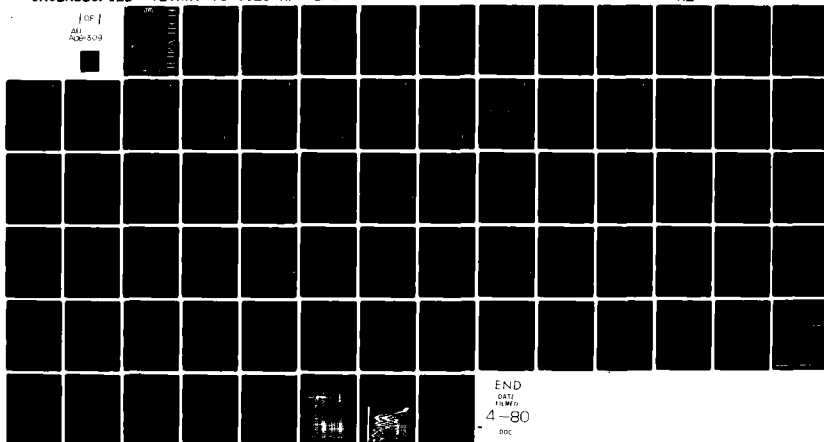
DACW57-78-C-0028

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TETRAT-TC-3925-APP-B-6

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**COLUMBIA RIVER ENTRANCE
CHANNEL DEEP-DRAFT VESSEL
MOTION STUDY**

FINAL REPORT - PHASE 1

ADA 081 309

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APPENDICES B, C, D, E, F, G

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SEPTEMBER 1979

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A081529

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) 6 Columbia River Entrance Channel Deep-Draft Vessel Motion Study. Appendices B thru G.		5. TYPE OF REPORT & PERIOD COVERED 9 Final Report & Phase 1, Through 31 Sep 79
7. AUTHOR 10 Shen/Wang Craig/Leidersdorf Chris/Butcher		6. PERFORMING ORG. REPORT NUMBER Tetra Tech Report #TC-3925
9. PERFORMING ORGANIZATION NAME AND ADDRESS Tetra Tech, Inc. 630 N. Rosemead Blvd. Pasadena, CA 91107		8. CONTRACT OR GRANT NUMBER(s) 15 DACW57-78-C-0028
11. CONTROLLING OFFICE NAME AND ADDRESS Department of the Army Portland District, Corps of Engineers, NPPEN-PL-2 P.O. Box 2946, Portland, OR 97208		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		11. REPORT DATE 11 Sep 1979
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14 TETRAT-TC-3925-APP-B-G.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES To be presented at ASCE National Convention, 14-18 April 1980 in Portland, Oregon.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Ship motions in entrance channels, wave effects on ships, Columbia River entrance, prototype ship motion monitoring, shallow water ship motions, entrance channel design. Also Ship Motion, Water Wave Action on Ships, Approach Channels, Entrance Channels.		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A prototype ship motion monitoring program was initiated by the Portland District, U.S. Army Corps of Engineers to provide design criteria for the entrance channel at the mouth of the Columbia River. The contractor's field team boarded deep draft vessels bound to or from the Columbia River and measured vertical acceleration (heave), pitch, roll, yaw, and position as the vessels transited the 5-mile entrance channel. Twenty-nine vessels were monitored in the period May 1978-March 1979.		

DD FORM 1 JAN 73 1473

EDITION OF 1 NOV 65 IS OBSOLETE

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

403146 Jm

APPENDIX B
INSTRUMENTATION SPECIFICATIONS

403 146 Gm

QANTEX TAPE DRIVE SPECIFICATIONS

MEDIUM..... 3M DC 300A Data Cartridge

COMMANDS..... Write, Write Tape Mark, Erase, Read Forward, Read Reverse, Space Block Forward, Space Block Reverse, Space File Forward, Space File Reverse, Rewind, Unload and Eject.

COMMAND CHAINING.... Available for Read and Space Block Commands

DENSITY..... 1600 bpi, phase-encoded

TRANSFER RATE..... 6000 bytes per second at 30 inches per second

READ-WRITE SPEED.... 30 inches per second

REWIND & SEARCH
SPEED..... 90 inches per second

COMPATIBILITY..... ANSI & ECMA Standards

HEAD TYPE..... 4 track Read-After-Write

POWER..... 110V/60Hz or 105-235V/40-440Hz (Option 01)

SIZE..... 21"x17"x7½"

WEIGHT..... 29 lbs. (2710-1D), 34 lbs (2710-2D)

DATA CHECK..... Cyclic Redundancy Check Character

01.0 SIGNAL FREEDOM _____

1.1 INNER SIGNAL _____ 36° MINIMUM

1.2 OUTER SIGNAL _____ 360° CONTINUOUS

2.0 OUTPUT TAN _____

02.1 PICKOFF _____ POTENTIOMETER

02.1.1 RESISTANCE _____ 5000 OHMS \pm 10%

2.1.2 POWER DISSIPATION _____ 0.5 WATTS MAXIMUM

03.0 SPIN MOTOR _____

3.1 VOLTAGE _____ 115 VAC \pm 10%, 100 HZ \pm 5%, 1 PHASE

3.2 CURRENT _____ 100 MA MAXIMUM STARTING, 65 MA MAXIMUM RUNNING

3.3 TIME TO SPEED _____ 2 MINUTES NOMINAL WITH BOX OF RATED VOLTAGE APPLIED

4.0 ERECTION _____

4.1 CURRENT _____ 100 MA NOMINAL, INTERMITTENT, INTERNALLY CONNECTED WITH MOTOR

05.0 BRIFT _____

5.1 SCORSBY _____ NOT MORE THAN 10°/HOUR (SCORSBY DEFINED AS ALTERNATE CLOCKWISE AND COUNTERCLOCKWISE 32.5° ROLL, PITCH, AND YAW MOVEMENTS AT 6.0 CYCLES PER MINUTE)

05.2 HEADING _____ OUTPUT TO 0 - 359° \pm 1° (NON-SHORTING GAP IN POTENTIOMETER 1.0° TO 2.0°).

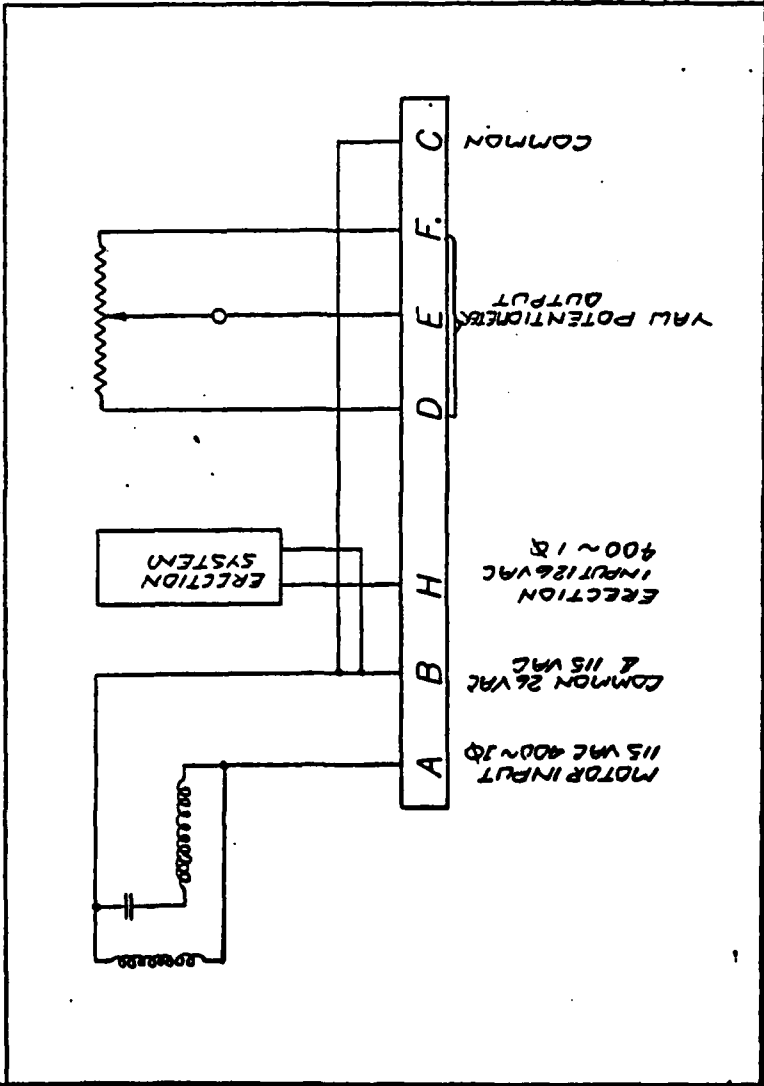
06.0 INSULATION RESISTANCE _____ 20 MEGOHMS, ELECTRICAL CIRCUITS TO GROUND WITH 500 VDC APPLIED

7.0	ENVIRONMENTAL SPECIFICATIONS	
7.1	TEMPERATURE	-40°F TO +165°F
7.2	ALTITUDE	-1000 FEET TO +40,000 FEET
7.3	VIBRATION	5 TO 500 HZ, 0.036 INCH D.A. ON SG WHICHEVER IS THE LIMITING VALUE
7.4	HUMIDITY	0 - 95% RELATIVE HUMIDITY AT 90°F
7.5	SEALING	"O" RING, SEALED
8.0	REMARKS	
8.1	ITEMS MARKED WITH (*) ARE CHECKED IN PRODUCTION TESTS. OTHER ITEMS FOR REFERENCE MAY BE CHECKED ON ORDER BY QUALIFICATION TESTS.	
8.2	INSTRUMENT WEIGHT	3.5 LBS.

ITEMS MARKED WITH (*) ARE CHECKED IN PRODUCTION TESTS. OTHER ITEMS FOR REFERENCE MAY BE CHECKED ON ORDER BY QUALIFICATION TESTS.

INSTRUMENT WEIGHT _____ 3.5 LBS.

44-38861-100 WFO CASH PAC TAB Untransmited Identification <i>Red</i> Base document By _____ Date: 11-11-77	Availability Codes Avail and/or special Dist	A-25 4H
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[illegible]

SPECIFICATIONS

1.0 MECHANICAL LIMITS 2.0 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 3.0 3.1 3.2 4.0 4.1 4.2 4.3 4.4 4.5 4.5.1 4.5.2 4.5.3 5.0 5.1 5.2 5.3 5.4 5.5

285° MINIMUM FREEDOM OF ROTATION ABOUT PITCH AXIS. 360° ABOUT ROLL AXIS

POTENTIOMETER OUTPUT PROPORTIONAL TO ANGULAR DISPLACEMENT ABOUT THE ROLL AND PITCH AXIS.

ROLL ELECTRICAL DISPLACEMENT 150° ±2°

PITCH ELECTRICAL DISPLACEMENT 150° ±2°

RESISTANCE 5,000 ±5% OHMS

RESOLUTION 0.2° MAXIMUM

LINEARITY 0.5% OF FULL RANGE

POWER DISSIPATION 0.5 WATTS

CONTACT RESISTANCE 200 OHMS EQUIVALENT CONTACT RESISTANCE PER N.A.S. 710

ELECTRICAL REQUIREMENTS

VOLTAGE 24 VDC ±5%

CURRENT 7.5 AMP NOMINAL

SPIN MOTOR AND ERECTION SYSTEM THROUGH INTERNAL INVERTER

VOLTAGE 115 VAC, 500 MC, SINGLE PHASE

CURRENT (RUNNING) 110 MA NOMINAL

CURRENT (STARTING) 350 MA NOMINAL

TIME TO SPEED 3 MINUTES MAXIMUM

ERECTION RATES

TIME TO ERECT 3 MINUTES MAXIMUM TO WITHIN 1.0° OF VERTICAL AFTER POWER IS APPLIED UNDER STATIC CONDITIONS. 6 MIN. DYNAMIC CONDITIONS.

NOMINAL ERECTION RATE ROLL 7°/MIN. PITCH 7°/MIN.

VERTICAL ACCURACY ±0.2° OF TRUE VERTICAL

ACCELEROMETER

RANGE ±2.0G

INPUT 24 VDC FROM INPUT VOLTAGE (INTERNALLY REGULATED)

OUTPUT SENSITIVITY 2.50V/G

ACCURACY (INCLUDING HYSTERESIS AND REPEATABILITY) ±0.1% OF FULL SCALE

SELF TEST CURRENT TORQUING CAPABILITY FOR CALIBRATION CHECK.

ENVIRONMENTAL

TEMPERATURE 0°F TO +130°F

ALTITUDE 1000 TO 40,000 FT.

VIBRATION 5 TO 500 HZ AT 0.036 G.A. ON 5G WHICH EVER IS LESS

SHOCK 20G ALL AXES 10 ±1 MS

INSULATION RESISTANCE 20 MEGOHMS AT 50 VDC BETWEEN ISOLATED CIRCUITS AND CASE

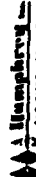
FINISH MOUNTING BASE (BLACK EPOXY), CASE (BLACK ANODIZE), AND MOUNTING PLATE (STAINLESS STEEL)

WEIGHT 5 POUNDS MAXIMUM

SERVICE LIFE 500 HOURS

REMARKS

ITEMS MARKED WITH (*) ARE CHECKED IN PRODUCTION TESTS. OTHER ITEMS FOR REFERENCE MAY BE CHECKED ON ORDER BY QUALIFICATION TESTS.

 Humphrey <small>TEST EQUIPMENT, INSTRUMENTS</small>		ELECTRONICS AND INSTRUMENTS	
TYPE LYNXIDE DURING ACCELEROMETER	MODEL NO. C	DATE 10/1/68	REV. 1
SECTION STARKLEY		UNIT 2 of 2	

APPENDIX C

MONTHLY SUMMARIES OF WEATHER OBSERVATIONS AT CLATSOP
COUNTY AIRPORT, ASTORIA, OREGON

MAY, 1978 - JUNE, 1978
NOVEMBER, 1978 - MARCH, 1979

NATIONAL WEATHER SERVICE OFC
CLATSOP COUNTY AIRPORT

MONTHLY SUMMARY



ASTORIA, OREGON

TEMPERATURE °F						DEGREE DAYS		WEATHER TYPES ON DATES OF OCCURRENCE	SNOW. ICE PELLETS ON ICE ON GROUND AT CLOSE	PRECIPITATION		STATION SNOW DEPTH INCHES	WIND				SUNSHINE		SOIL COVER TESTING	
DATE	MINIMUM	MAXIMUM	MEAN	WIND SPEED M.P.H.	WIND DIRECTION	HEATING DEGREE DAYS	Cooling DEGREE DAYS			WATER IN LAST 24 HOURS	SNOW. ICE PELLETS IN LAST 24 HOURS		WIND DIRECTION	WIND SPEED M.P.H.	WIND DIRECTION	WIND SPEED M.P.H.	WIND DIRECTION	PERCENT OF TOTAL	PERCENT OF TOTAL	PERCENT OF TOTAL
1	60	42	51	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
2	56	46	51	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
3	56	44	50	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
4	52	38	45	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
5	60	36	48	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
6	64	32	48	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
7	64	32	48	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
8	64	40	52	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
9	52	48	50	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
10	52	48	50	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
11	56	48	52	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
12	57	43	50	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
13	56	48	52	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
14	56	48	52	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
15	56	48	52	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
16	61	43	52	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
17	63	47	55	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
18	71	38	54	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
19	61	48	54	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
20	66	48	57	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
21	66	48	57	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
22	57	43	50	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
23	56	40	48	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
24	60	43	51	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
25	56	46	51	1	0	14	0	0	0	0	0	0	13	27	13	27	13	27	13	27
26	56	50	54	1	0															

• EXTREME FOR THE NORTH - LAST OCCURRENCE IF MORE THAN ONE.
• TRACE AMOUNT
• ALSO ON AN EARLIER DATE, OR DATES.
• HEAVY FOG - VISIBILITY 1/4 MILE OR LESS.
• FIGURES FOR WIND DIRECTIONS ARE TENS OF DEGREES CLOCKWISE FROM TRUE NORTH. DO - CALM.
• DATA IN COLS. 4 AND 12-15 ARE BASED ON 7 ON

WIND OBSERVATIONS PER DAY AT 3-HOUR INTERVALS. FASTEST TALL MILE SPEEDS ARE FASTEST OBSERVED ONE-MINUTE TALL MILES WHEN DIRECTIONS ARE IN TENS OF DEGREES. THE / WITH THE DIRECTION INDICATES PEAK GUST SPEED.

ANY ERRORS DETECTED WILL BE CORRECTED AND CHANGES IN SUMMARY DATA WILL BE ANNOTATED IN THE ANNUAL SUMMARY

SUMMARY BY HOURS

STATION TIME		AVERAGES										RESULTING	
		STATION PRESSURE IN.	TEMPERATURE				WIND		DIRECTION	SPEED			
			AIR °	WET BULB °	DW. PT. °	RELATIVE HUMIDITY %	WIND SPEED M.P.H.						
01	7	30.12	47	45	44	85	8	17	2	1.1			
04	7	30.11	46	44	43	86	6	17	2	1.1			
07	7	30.12	46	44	43	87	6	17	1	1.1			
10	7	30.13	46	51	47	74	6	13	27	7			
13	8	30.13	46	47	46	73	12	6	27	7			
16	8	30.12	46	52	47	69	13	6	27	8			
19	8	30.11	46	48	45	73	10	27	28	8			

HOURLY PRECIPITATION (WATER EQUIVALENT IN INCHES)

[illegible]

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Samuel B. Mitchell
DIRECTOR, NATIONAL CLIMATE CENTER

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08/21/78 250

[illegible]

CEILING
LINE, DISCLOSED AND LOCATED

0 TOWNSEND
 1 TOWNSEND STORM
 2 SQUALL
 3 SNIN
 04 SNIN SNOWERS
 5 FREEZING SNIN
 6 GRIZZLE
 7 L FREEZING GRIZZLE
 8 SNIN
 9 SNIN PELLETS
 1C ICE CRYSTALS
 2C SNIN SNOWERS
 3C SNIN GAINS
 4P ICE PELLETS
 5 HAIL
 6 FOG
 7P ICE FOG
 8P GROUND FOG
 9D BLUING DUST
 0E BLUING SNOW
 1S BLUING SNOW
 2V BLUING SPRAY
 3 SNOW
 4 HAZE
 5 DUST

DIRECTIONS ARE THOSE FROM WHICH THE WIND BLOWS. INDICATED IN TERMS OF DEGREES FROM TRUE NORTH: 1-2.. 09 FOR EAST. 18 FOR SOUTH. 27 FOR WEST. ENTRY OF 00 IN THE DIRECTION COLUMN INDICATES CALM.

SPEED IS EXPRESSED IN KNOTS;
MULTIPLY BY 1.15 TO CONVERT
TO MILES PER HOUR.

U.S. DEPARTMENT OF COMMERCE
NATIONAL CLIMATIC CENTER
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ASHEVILLE, N.C. 28801

AN EQUAL OPPORTUNITY EMPLOYER

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COM-210



FIRST CLASS

CLATSOP COUNTY AIRPORT

MONTHLY SUMMARY



LATITUDE 46° 08' N LONGITUDE 123° 43' W ELEVATION 10000000
 DAY. STANDARD TIME USED: PACIFIC LEAF 004234

ASTORIA, OREGON

[illegible]

6 EXTREME FOR THE NORTH - LAST OCCURRENCE IS
NONE FROM ONE.
7 FORCE UNKNOWN
8 ALSO ON AN EARLIER DATE, OR DATES.
9 HEAVY FOG - VISIBILITY 1/4 MILE OR LESS.
10 FIGURES FOR WIND DIRECTIONS ARE TENS OF DE-
GREES CLOCKWISE FROM TRUE NORTH. 00 = CALM.
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WIND OBSERVATIONS PER DAY AT 3-HOUR INTERVALS.
FASTEST WIND WIND SPEEDS ARE FASTEST OBSERVED
ONE-MINUTE VALUES WITH DIRECTIONS ARE IN TENS
OF DEGREES. THE / WITH THE DIRECTION INDICATES
PEAK GUST SPEED.
ANY ERRORS DETECTED WILL BE CORRECTED AND
CHANGES IN SUMMARY DATA WILL BE INDICATED IN
THE ANNUAL SUMMARY

SUMMARY BY HOURS

TIME	LATITUDE	LONGITUDE	PARAMETERS										RESOLUTION	
			SPEED	PRESSURE	TEMPERATURE				RELATIVE HUMIDITY %	WIND SPEED K.P.H.	DIRECTION	SPEED	M.P.H.	
					AIR °F	WET BULB °F	DEW PT. °F	RELATIVE HUMIDITY %						
01	8	30.09	94	93	91	88	9.4	17	2.0					
04	7	30.06	93	91	90	86	9.4	18	2.0					
07	7	30.08	97	94	92	89	9.1	17	1.8					
10	7	30.07	92	97	93	79	9.1	24	4.4					
13	8	30.07	95	98	93	79	11.0	26	6.0					
16	8	30.07	95	98	94	88	11.7	25	6.0					
19	7	30.08	90	98	93	77	8.0	23	6.0					

HOURLY PRECIPITATION (WATER EQUIVALENT IN INCHES)

A. A. HUNT ENGINE #1													P. A. HUNT ENGINE #1												
	1	2	3	4	5	6	7	8	9	10	11	12		1	2	3	4	5	6	7	8	9	10	11	12
1																									
2																									
3																									
4																									
5																									
6																									
7	T	.01	.03	.01	T																		T	T	
8																									
9		.02	.21	.02	T	.09	.04	T	.01	T	.06		.04				.03	T		.01	.01	T	.07	T	.03
10			.01	.02	.01	.02	.03	.02	T	.04	T	.02	T						.03	.01	.03	.20	.03		
11	.06	.07	T	.02		.01	.11	.09																	
12										.04	T	.01		.02	T										
13	T		.02	.07	.04	.10	.08	.17	.02	.02	.01		.02	T	T				T	T		.02		.01	
14	.06	.02	.03	.11	.12	.11	.02	.02	.01	.01	.09	T		.06	.01	T	T							T	
15					T	T			.01	.02	T														
16	T												T		T										
17																									
18																									
19																									
20																									
21																									
22	T	.01	.02	.01	T	T	T	.01	T				T	T		T	T	T	T	T	T	T	T		
23	T	T																							
24																									
25																									
26		T	T	T	T	.02	.01	T																	
27																									
28																									
29																									
30	T	T	T	T				T	T											T	T	.02	.01	.03	.01

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Daniel B. Mitchell
DIRECTOR, NATIONAL CLIMATIC CENTER

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07/28/23 230

OBSERVATIONS AT 3-HOUR INTERVALS

OBSERVATIONS AT 3-HOUR INTERVALS

OBSERVATIONS AT 3-HOUR INTERVALS										OBSERVATIONS AT 3-HOUR INTERVALS									
HOUR	DAY	MONTH	YEAR	WIND	TEMP.	REL. HUM.	WIND	TEMP.	REL. HUM.	HOUR	DAY	MONTH	YEAR	WIND	TEMP.	REL. HUM.	WIND	TEMP.	REL. HUM.
01	01	01	1950	010	50	60	010	50	60	01	01	01	1950	010	50	60	010	50	60
02	01	01	1950	010	50	60	010	50	60	02	01	01	1950	010	50	60	010	50	60
03	01	01	1950	010	50	60	010	50	60	03	01	01	1950	010	50	60	010	50	60
04	01	01	1950	010	50	60	010	50	60	04	01	01	1950	010	50	60	010	50	60
05	01	01	1950	010	50	60	010	50	60	05	01	01	1950	010	50	60	010	50	60
06	01	01	1950	010	50	60	010	50	60	06	01	01	1950	010	50	60	010	50	60
07	01	01	1950	010	50	60	010	50	60	07	01	01	1950	010	50	60	010	50	60
08	01	01	1950	010	50	60	010	50	60	08	01	01	1950	010	50	60	010	50	60
09	01	01	1950	010	50	60	010	50	60	09	01	01	1950	010	50	60	010	50	60
10	01	01	1950	010	50	60	010	50	60	10	01	01	1950	010	50	60	010	50	60
11	01	01	1950	010	50	60	010	50	60	11	01	01	1950	010	50	60	010	50	60
12	01	01	1950	010	50	60	010	50	60	12	01	01	1950	010	50	60	010	50	60
13	01	01	1950	010	50	60	010	50	60	13	01	01	1950	010	50	60	010	50	60
14	01	01	1950	010	50	60	010	50	60	14	01	01	1950	010	50	60	010	50	60
15	01	01	1950	010	50	60	010	50	60	15	01	01	1950	010	50	60	010	50	60
16	01	01	1950	010	50	60	010	50	60	16	01	01	1950	010	50	60	010	50	60
17	01	01	1950	010	50	60	010	50	60	17	01	01	1950	010	50	60	010	50	60
18	01	01	1950	010	50	60	010	50	60	18	01	01	1950	010	50	60	010	50	60
19	01	01	1950	010	50	60	010	50	60	19	01	01	1950	010	50	60	010	50	60
20	01	01	1950	010	50	60	010	50	60	20	01	01	1950	010	50	60	010	50	60
21	01	01	1950	010	50	60	010	50	60	21	01	01	1950	010	50	60	010	50	60
22	01	01	1950	010	50	60	010	50	60	22	01	01	1950	010	50	60	010	50	60
DAY 01										DAY 02									
01	02	01	1950	010	50	60	010	50	60	01	02	01	1950	010	50	60	010	50	60
02	02	01	1950	010	50	60	010	50	60	02	02	01	1950	010	50	60	010	50	60
03	02	01	1950	010	50	60	010	50	60	03	02	01	1950	010	50	60	010	50	60
04	02	01	1950	010	50	60	010	50	60	04	02	01	1950	010	50	60	010	50	60
05	02	01	1950	010	50	60	010	50	60	05	02	01	1950	010	50	60	010	50	60
06	02	01	1950	010	50	60	010	50	60	06	02	01	1950	010	50	60	010	50	60
07	02	01	1950	010	50	60	010	50	60	07	02	01	1950	010	50	60	010	50	60
08	02	01	1950	010	50	60	010	50	60	08	02	01	1950	010	50	60	010	50	60
09	02	01	1950	010	50	60	010	50	60	09	02	01	1950	010	50	60	010	50	60
10	02	01	1950	010	50	60	010	50	60	10	02	01	1950	010	50	60	010	50	60
11	02	01	1950	010	50	60	010	50	60	11	02	01	1950	010	50	60	010	50	60
12	02	01	1950	010	50	60	010	50	60	12	02	01	1950	010	50	60	010	50	60
13	02	01	1950	010	50	60	010	50	60	13	02	01	1950	010	50	60	010	50	60
14	02	01	1950	010	50	60	010	50	60	14	02	01	1950	010	50	60	010	50	60
15	02	01	1950	010	50	60	010	50	60	15	02	01	1950	010	50	60	010	50	60
16	02	01	1950	010	50	60	010	50	60	16	02	01	1950	010	50	60	010	50	60
17	02	01	1950	010	50	60	010	50	60	17	02	01	1950	010	50	60	010	50	60
18	02	01	1950	010	50	60	010	50	60	18	02	01	1950	010	50	60	010	50	60
19	02	01	1950	010	50	60	010	50	60	19	02	01	1950	010	50	60	010	50	60
20	02	01	1950	010	50	60	010	50	60	20	02	01	1950	010	50	60	010	50	60
21	02	01	1950	010	50	60	010	50	60	21	02	01	1950	010	50	60	010	50	60
22	02	01	1950	010	50	60	010	50	60	22	02	01	1950	010	50	60	010	50	60
DAY 03										DAY 04									
01	03	01	1950	010	50	60	010	50	60	01	03	01	1950	010	50	60	010	50	60
02	03	01	1950	010	50	60	010	50	60	02	03	01	1950	010	50	60	010	50	60
03	03	01	1950	010	50	60	010	50	60	03	03	01	1950	010	50	60	010	50	60
04	03	01	1950	010	50	60	010	50	60	04	03	01	1950	010	50	60	010	50	60
05	03	01	1950	010	50	60	010	50	60	05	03	01	1950	010	50	60	010	50	60
06	03	01	1950	010	50	60	010	50	60	06	03	01	1950	010	50	60	010	50	60
07	03	01	1950	010	50	60	010	50	60	07	03	01	1950	010	50	60	010	50	60
08	03	01	1950	010	50	60	010	50	60	08	03	01	1950	010	50	60	010	50	60
09	03	01	1950	010	50	60	010	50	60	09	03	01	1950	010	50	60	010	50	60
10	03	01	1950	010	50	60	010	50	60	10	03	01	1950	010	50	60	010	50	60
11	03	01	1950	010	50	60	010	50	60	11	03	01	1950	010	50	60	010	50	60
12	03	01	1950	010	50	60	010	50	60	12	03	01	1950	010	50	60	010	50	60
13	03	01	1950	010	50	60	010	50	60	13	03	01	1950	010	50	60	010	50	60
14	03	01	1950	010	50	60	010	50	60	14	03	01	1950	010	50	60	010	50	60
15	03	01	1950	010	50	60	010	50	60	15	03	01	1950	010	50	60	010	50	60
16	03	01	1950	010	50	60	010	50	60	16	03	01	1950	010	50	60	010	50	60
17	03	01	1950	010	50	60	010	50	60	17	03	01	1950	010	50	60	010	50	60
18	03	01	1950	010	50	60	010	50	60	18	03	01	1950	010	50	60	010	50	60
19	03	01	1950	010	50	60	010	50	60	19	03	01	1950	010	50	60	010	50	60
20	03	01	1950	010	50	60	010	50	60	20	03	01	1950	010	50	60	010	50	60
21	03	01	1950	010	50	60	010	50	60	21	03	01	1950	010	50	60	010	50	60
22	03	01	1950	010	50	60	010	50	60	22	03	01	1950	010	50	60	010	50	60
DAY 05										DAY 06									
01	05	01	1950	010	50	60	010	50	60	01	05	01	1950	010	50	60	010	50	60
02	05	01	1950	010	50	60	010	50	60	02	05	01	1950	010	50	60	010	50	60
03	05	01	1950	010	50	60	010	50	60	03	05	01	1950	010	50	60	010	50	60
04	05	01	1950	010	50	60	010	50	60	04	05	01	1950	010	50	60	010	50	60
05	05	01	1950	010	50	60	010	50	60	05	05	01	1950	010	50	60	010	50	60
06	05	01	1950	010	50	60	010	50	60	06	05	01	1950	010	50	60	010	50	60
07	05	01	1950	010	50	60	010	50	60	07	05	01	1950	0					

NOTES

CEILING

WEATHER

- [illegible]

MIND

DIRECTIONS ARE THOSE FROM WHICH THE WIND BLOWS. INDICATED IN TERMS OF DEGREES FROM TRUE NORTH: I.E.. 09 FOR EAST. 18 FOR SOUTH. 27 FOR WEST. ENTRY OF 00 IN THE DIRECTION COLUMN INDICATES CALM.

SPEED IS EXPRESSED IN KNOTS.
MULTIPLY BY 1.15 TO CONVERT
TO MILES PER HOUR.

STATION

YEAR & MONTH
72 08

U.S. DEPARTMENT OF COMMERCE
NATIONAL CLIMATIC CENTER
FEDERAL BUILDING
ASHEVILLE, N.C. 28801

AN EQUAL OPPORTUNITY EMPLOYER

POSTAGE AND FEE PAID
U.S. DEPARTMENT OF COMMERCE

COM-210



FIRST CLASS



NOVEMBER 1978 ASTORIA, OREGON

[illegible]

MORE OBSERVATIONS PER DAY AT 3-HOUR INTERVALS.
 FASTEST WIND SPEEDS ARE FASTEST OBSERVED
 ONE-MINUTE VALUES WHEN DIRECTIONS ARE IN TENS
 OF DEGREES. THE / WITH THE DIRECTION INDICATES
 PEAK GUST SPEED.
 ANY ERRORS DETECTED WILL BE CORRECTED AND
 CHANGES IN SUMMARY DATA WILL BE ANNOTATED IN
 THE ANNUAL SUMMARY

DATE	TIME	LAT.	LONG.	AVERAGES													
				TEMPERATURE					WIND					SEA			
				STATION	WIND	WIND	WIND	WIND	WIND	WIND	WIND	WIND	WIND	WIND			
01	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
02	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
03	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
04	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
05	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
06	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
07	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
08	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
09	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
10	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
11	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
12	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
13	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
14	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
15	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
16	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
17	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
18	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
19	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
20	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
21	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
22	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
23	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
24	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
25	04	30.14	38	37	34	34	34	34	34	34	34	34	34	34	34	34	34
26	04	30.14	38</														

	P. R. CORP (USING AT)												P. R. CORP (USING AT)											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
1																								
2																								
3	.01	T		.02	.06	.05	.07	.06	.05	.06	.04	.01	T	.01	.01	.05	.07	.01	.01	.01	T	T	.01	.01
4	.02	.01	T										T	T	.01	T				.06	.26	.26	.05	.03
5																								
6																								
7	T												T	T		T	.01	.06	.05	.07	.10	.11	.01	.01
8		T	.01	T						.01	T	T		.03		T		.06	.05	.07	.10	.11	.01	.03
9																								
10																								
11																								
12																								
13																								
14																								
15										T	T	.02	T	T	T	T	T	.02	.05	.10	.10	.06	.12	.20
16	.06	.04	.06	.03	.03	.01	.20	.02	.04	.02	.06	.02	.01	T	T	.02	.01	.02	.01	.03	.03	.06	.02	.06
17	.01	.02																						
18	.02											T	.05	.07	.11	.15	.11	.05	.04	.06	.10	.14	.10	.10
19	.11	T	.14	T	.06	.10	.01	.04	.02	.01	.06	.07	.05	.01	.01	T	T	T	T	T	T	.01	T	T
20																								
21																								
22																								
23			T	T																				
24																					T	.01	.01	.01
25	.01																							
26																								
27		T	T	T	T	T	.04	.01	.03	T	.02	.01	.06	.03	.03	.06	.02	.01	.01	T	.06	.14	.02	T
28		.01	.01	T	T	T	.08	.11	.10	.10	.12	.10	.04	T	T	.02	.01	.01	T		.01	T	.01	T
29	.01												.17	T	T	T	.01	.04		.04	T	.02		T

I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801.

Daniel B. Mitchell
DIRECTOR, NATIONAL CLIMATIC CENTER

USCONN--NORR--ASHEVILLE 12/19/78 290

NAME OF THE PARTY		ADDRESS		TELEPHONE NO.		FACSIMILE NO.		TELETYPE NO.		TELEGRAPHIC CODE		TELEPHONE NO.		FACSIMILE NO.		TELETYPE NO.		TELEGRAPHIC CODE	
NAME	ADDRESS	TELEPHONE NO.	FACSIMILE NO.	TELETYPE NO.	TELEGRAPHIC CODE	NAME	ADDRESS	TELEPHONE NO.	FACSIMILE NO.	TELETYPE NO.	TELEGRAPHIC CODE	NAME	ADDRESS	TELEPHONE NO.	FACSIMILE NO.	TELETYPE NO.	TELEGRAPHIC CODE	NAME	ADDRESS
1. Mr. A. B. C.	123 Main St.	1234	5678	9101	2345	6789	1011	1213	1415	1617	1819	2021	2223	2425	2627	2829	3031	3233	3435
2. Mr. D. E. F.	456 Main St.	3456	7890	2102	3456	7890	1122	1324	1526	1728	1930	2132	2334	2536	2738	2940	3142	3344	
3. Mr. G. H. I.	789 Main St.	4567	8901	3213	4567	8901	2233	2435	2637	2839	3041	3243	3445	3647	3849	4051	4253	4455	
4. Mr. J. K. L.	101 Main St.	5678	9012	4324	5678	9012	3344	3546	3748	3950	4152	4354	4556	4758	4960	5162	5364	5566	
5. Mr. M. N. O.	234 Main St.	6789	0123	5435	6789	0123	4455	4657	4859	5061	5263	5465	5667	5869	6071	6273	6475	6677	
6. Mr. P. Q. R.	567 Main St.	7890	1234	6546	7890	1234	5566	5768	5970	6172	6374	6576	6778	6980	7182	7384	7586	7788	
7. Mr. S. T. U.	890 Main St.	8901	2345	7657	8901	2345	6677	6879	7081	7283	7485	7687	7889	8091	8293	8495	8697	8899	
8. Mr. V. W. X.	123 Main St.	9012	3456	8768	9012	3456	7788	7990	8192	8394	8596	8798	8900	9102	9304	9506	9708	9910	
9. Mr. Y. Z. A.	456 Main St.	0123	4567	9879	0123	4567	8899	9001	9203	9405	9607	9809	0011	0213	0415	0617	0819	1021	
10. Mr. B. C. D.	789 Main St.	1234	5678	0980	1234	5678	9900	0102	0304	0506	0708	0910	1112	1314	1516	1718	1920	2122	

[illegible]

CEILING
WALL JOINTS CRACKED

7	TURNED
7	TURNINGSTON
8	SQUALL
8	SOIN
8B	SOIN SHIMERS
9B	FREEZING SOIN
11	GRIZLE
21	FREEZING GRIZLE
3	SHOO
3P	SHOO PELLETS
1C	ICE CRYSTALS
3B	SHOO SHIMERS
3B	SHOO GRIMES
1P	ICE PELLETS
8	MAIL
8	POB
1P	ICE POB
8P	GRIMING POB
8B	GRIMING DUST
8B	GRIMING SHOO
8B	GRIMING SHOO
8P	GRIMING SPARTY
8	SHINE
10	WAVE
8	DUST

DIRECTIONS ARE THOSE FROM WHICH THE WIND BLOWS. INDICATED IN TERMS OF DEGREES FROM TRUE NORTH: I.E., 09 FOR EAST, 18 FOR SOUTH, 27 FOR WEST. ENTRY OF 00 IN THE DIRECTION COLUMN INDICATES CALM.

SPEED IS EXPRESSED IN KNOTS.
MULTIPLY BY 1.15 TO CONVERT
TO MILES PER HOUR.

YEAR & MONTH
78 11

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE

COM-210



FIRST CLASS



DECEMBER 1978 ASTORIA, OREGON

[illegible]

• EXTREME FOR THE NORTH - LAST OCCURRENCE IF MORE THAN ONE.
• TRACE AMOUNT
• ALSO ON AN EARLIER DATE, OR DATES.
• HEIGHT 9000 - VISIBILITY 1/4 MILE OR LESS.
• FIGURES FOR WIND DIRECTIONS ARE TENS OF DEGREES CLOCKWISE FROM TRUE NORTH. OO = CALM.
• DATA IN CDS. 6 AND 12-18 ARE BASED ON 7 OR

NOTE OBSERVATIONS PER DAY AT 3-HOUR INTERVALS.
FASTEST WIND VALUE SPEEDS ARE FASTEST OBSERVED
ONE-MINUTE VALUES WHEN DIRECTIONS ARE IN TERMS
OF DEGREES. THE / WITH THE DIRECTION INDICATES
PEAK GUST SPEED.
ANY ERRORS DETECTED WILL BE CORRECTED AND
CHANGES IN SUMMARY DATA WILL BE ANNOTATED IN
THE MONTHLY SUMMARY

TIME		AVERAGES										RES. TEST	
		LAT CENTER	STATION	TEMPERATURE				RELATIVE				DIRECTION	SPEED
				STATION PRESSURE	AIR °F	SURF °F	WIND °F	HUMIDITY %	WIND SPEED	W. DIR.			
01	7	30.18		37	32	33	85	8.0	14	3.0			
04	8	30.18		36	33	32	85	7.4	13	3.1			
07	9	30.18		36	33	32	85	7.4	13	3.0			
10	9	30.22		36	33	32	85	7.8	10	2.8			
13	7	30.30		36	33	32	78	7.8	03	1.8			
16	7	30.30		36	33	32	78	7.8	03	1.8			
19	7	30.30		36	33	32	81	8.1	03	1.8			
22	7	30.21		36	33	31	87	7.9	14	2.3			

S. P. HOUR TRAINING ST													S. P. HOUR TRAINING ST												
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12		
1	.04	.01	T	T		.02	T								T	T	T	T			T	T			
2																									
3										.02	.02				.01	.01	.04	.03	.05	.02	.03	T			
4	.01	T	.02	.01	.04	.05	.02	.02	.03	.04	.03	.01	T	.01	.04	.03	.05	.02	.03	T					
5					.02	T															.01	.02			
6																									
7																									
8	T	T	.01	.02	.04	.06	.18	.04	.01	.03	.01	T			.02	.06	.01	T	T	.05	.01				
9				T	.01	T	.06	.06	.01	.03	.01	T					.04	T		.02	T				
10	T	.01	.02				.01	.01	T	T	T	.01	.01	.13	.13	.02	.01	.03	.06	.02	.06				
11																	T	T			.01	.02			
12																									
13																									
14	.01	.06	.10	.15	.01	T	.02	T	.05	.03							.04			.01	T	.01			
15																				.01					
16	.01	.13	.01	T	.05	.06	.16	.13	.06	.06	.01				.11	.06	.02	.12	.01	T	.01	T			
17																									
18																									
19																									
20					T	.02	.07	.05	.04	.04	.01	.02	.01	.02	.06	.06	T	T	.01	.06	.02	.02			
21	T	T	T	.04	T	.01	.06	T	.01	.02	.02	.02	.01	.01			.01	.01	T	T	.01	T			
22					T	T	T	.02	.03	T															
23					T	T	T	.01	.01	.02	.01	.03	.06	.03	T	T	.01	T	T	T	T	.02			
24	.01	T	T	T	.02	T																			
25																									
26																									
27		T	T				T	.02																	
28																									
29																									
30																									
31											T		T	T	.01	.02	.04	.04	.01	T	T				

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noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA AND INFORMATION SERVICE

Daniel B. Mitchell
DIRECTOR, NATIONAL CLIMATE CENTER

USCDAW--NOMA--ASME V(LL) 01/28/78 200

OBSERVATIONS AT 3-HOUR INTERVALS

OBSERVATIONS AT 3-HOUR INTERVALS

HOUR	TEMPERATURE				WIND				WIND DIRECTION	WIND VELOCITY	TEMPERATURE				WIND				WIND DIRECTION	WIND VELOCITY	
	MAX	MIN	AVERAGE	WIND	WIND	WIND	WIND	WIND			WIND	WIND	WIND	WIND	WIND	WIND	WIND	WIND			
01	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
02	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
03	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
04	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
05	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
06	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
07	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
08	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
09	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
10	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
11	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
12	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
13	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
14	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
15	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
16	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
17	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
18	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
19	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
20	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
21	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
22	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
23	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
24	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
25	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
26	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
27	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
28	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
29	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
30	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
31	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
32	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
33	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
34	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
35	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
36	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
37	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
38	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
39	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
40	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
41	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
42	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
43	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
44	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
45	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
46	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
47	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
48	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
49	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
50	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
51	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
52	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
53	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
54	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
55	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
56	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
57	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
58	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
59	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
60	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
61	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
62	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
63	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
64	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
65	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
66	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
67	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
68	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
69	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
70	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
71	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
72	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
73	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
74	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
75	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45	45	45	45	45	45	45	45	45
76	10	36	12	DAY 01	0	7	30	10	DAY 02	45	45	45	45								

CEILING

U.S. DEPARTMENT OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION

MEATY MEAT

- 0 IONANE
- 1 IONOSPHERE
- 2 ISHALL
- 3 ISIN
- 4 ISIN SHINERS
- 5 FREEZING ISIN
- 6 FREEZE
- 7 FREEZING OFFICE
- 8 SHIN
- 9 SHIN PELLETS
- 0 ICE CRYSTALS
- 1 SHIN SHINERS
- 2 SHIN SHINING
- 3 ICE PELLETS
- 4 WHIL
- 5 FOS
- 6 ICE FOS
- 7 SHINING FOS
- 8 SHINING GUST
- 9 SHIN SHIN
- 0 SHINING SHIN
- 1 SHINING SPINNY
- 2 SPINNE
- 3 WHALE
- 4 CHALE

WILSON

DIRECTIONS ARE THOSE FROM WHICH THE WIND BLOWS. INDICATED IN TENS OF DEGREES FROM TRUE NORTH: 1.E. 09 FOR EAST. 18 FOR SOUTH. 27 FOR WEST. ENTRY OF 00 IN THE DIRECTION COLUMN INDICATES CALM.

SPEED IS EXPRESSED IN KNOTS:
MULTIPLY BY 1.15 TO CONVERT
TO MILES PER HOUR.

U.S. DEPARTMENT OF COMMERCE
NATIONAL CLIMATIC CENTER
FEDERAL BUILDING
ASHEVILLE, N.C. 28801

STATION
ASTORIA, OREGON

AN EQUAL OPPORTUNITY EMPLOYER

70 12

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE

COM-210



FIRST CLASS

ASJCLIA, OREGON

Local Climatological Data

MONTHLY SUMMARY



LONGITUDE 48° 09' N **LATITUDE** 123° 53' W **ELEVATION** 1600M **DPT.** **STANDARD TIME USED:** PACIFIC **WAVE** 0943Z

JANUARY 1979 ASTORIA, OREGON

[illegible]

• EXTENDING FOR THE MONTH - LAST OCCURRENCE IS
MORE THAN ONE.
7 THREE MONTHS.
• ALSO ON AN EARLIER DATE, OR DATES.
HEAVY FOGS - VISIBILITY 1/4 MILE OR LESS.
FIGURES FOR WIND DIRECTION ARE TEN OF DE-
GREES CLOCKWISE FROM TRUE NORTH. 00 = CALM.
DATA IN COLS. 6 AND 12-18 ARE BASED ON 7 OF

MORE OBSERVATIONS PER DAY AT 3-HOUR INTERVALS.
 FASTEST WIND WIND SPEEDS ARE FASTEST OBSERVED
 ONE-MINUTE VALUES WHEN DIRECTIONS ARE IN TENS
 OF DEGREES. THE / WITH THE DIRECTION INDICATES
 PERM GUST SPEED.
 ANY ERRORS DETECTED WILL BE CORRECTED AND
 CHANGES IN SUMMARY DATA WILL BE ANNOTATED IN
 THE ANNUAL SUMMARY

SUMMARY BY HOURS

[illegible]

HOURLY PRECIPITATION (WATER EQUIVALENT IN INCHES)

[illegible]

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ncaa NATIONAL OCEANIC AND / ENVIRONMENTAL DATA AND
ATMOSPHERIC ADMINISTRATION / INFORMATION SERVICE

Daniel B. Mitchell
DIRECTOR, NATIONAL CLIMATE CENTER

USCOM - - NORM - - ASHEVILLE 01/07/79 200

OBSERVATIONS AT 3-HOUR INTERVALS									
HOUR	TEMPERATURE			WIND			TEMPERATURE		
	WAT. SURF.	AIR	WIND DIR.	WAT. SURF.	AIR	WIND DIR.	WAT. SURF.	AIR	WIND DIR.
01	10	10	10	10	10	10	10	10	10
02	10	10	10	10	10	10	10	10	10
03	10	10	10	10	10	10	10	10	10
04	10	10	10	10	10	10	10	10	10
05	10	10	10	10	10	10	10	10	10
06	10	10	10	10	10	10	10	10	10
07	10	10	10	10	10	10	10	10	10
08	10	10	10	10	10	10	10	10	10
09	10	10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	10	10	10
11	10	10	10	10	10	10	10	10	10
12	10	10	10	10	10	10	10	10	10
13	10	10	10	10	10	10	10	10	10
14	10	10	10	10	10	10	10	10	10
15	10	10	10	10	10	10	10	10	10
16	10	10	10	10	10	10	10	10	10
17	10	10	10	10	10	10	10	10	10
18	10	10	10	10	10	10	10	10	10
19	10	10	10	10	10	10	10	10	10
20	10	10	10	10	10	10	10	10	10
21	10	10	10	10	10	10	10	10	10
22	10	10	10	10	10	10	10	10	10
23	10	10	10	10	10	10	10	10	10
24	10	10	10	10	10	10	10	10	10
25	10	10	10	10	10	10	10	10	10
26	10	10	10	10	10	10	10	10	10
27	10	10	10	10	10	10	10	10	10
28	10	10	10	10	10	10	10	10	10
29	10	10	10	10	10	10	10	10	10
30	10	10	10	10	10	10	10	10	10
31	10	10	10	10	10	10	10	10	10
32	10	10	10	10	10	10	10	10	10
33	10	10	10	10	10	10	10	10	10
34	10	10	10	10	10	10	10	10	10
35	10	10	10	10	10	10	10	10	10
36	10	10	10	10	10	10	10	10	10
37	10	10	10	10	10	10	10	10	10
38	10	10	10	10	10	10	10	10	10
39	10	10	10	10	10	10	10	10	10
40	10	10	10	10	10	10	10	10	10
41	10	10	10	10	10	10	10	10	10
42	10	10	10	10	10	10	10	10	10
43	10	10	10	10	10	10	10	10	10
44	10	10	10	10	10	10	10	10	10
45	10	10	10	10	10	10	10	10	10
46	10	10	10	10	10	10	10	10	10
47	10	10	10	10	10	10	10	10	10
48	10	10	10	10	10	10	10	10	10
49	10	10	10	10	10	10	10	10	10
50	10	10	10</						

UNIT, REPRODUCED AND REVISED

7 FORTNIGHT
 7 FORTNIGHTSTOWN
 8 SQUALL
 8 SMILE
 8 SMILE SHOWER
 9 FREEZING SMILE
 9 GRIZZLE
 11 FREEZING GRIZZLE
 5 SMILE
 5 SMILE PELLETS
 1C ICE CRYSTALS
 5B SMILE SHOWER
 5B SMILE SMILE
 1P ICE PELLETS
 6 WAIL
 6 F
 1P ICE FOR
 00 GRINDING FOG
 00 GRINDING DUST
 00 GRINDING SAND
 05 GRINDING SMILE
 07 GRINDING SPARK
 0 SMOKE
 0 WAVE
 0 DUST

DIRECTIONS ARE THREE FROM WHICH THE WIND BLOWS. INDICATED IN TERMS OF DEGREES FROM TRUE NORTH: 1-6. 09 FOR EAST. 18 FOR SOUTH. 27 FOR WEST. ENTRY OF 00 IN THE DIRECT. & COLUMN INDICATES CALM.

* SPEED IS EXPRESSED IN KNOTS.
MULTIPLY BY 1.15 IS CONVENT
TO MILES PER HOUR.

STATION
ENTERED RECORD

AN EQUAL OPPORTUNITY EMPLOYER

YEAR 4 POSITION

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE

COM-210



FIRST CLASS

NATIONAL WEATHER SERVICE OF
CLATSOP COUNTY AIRPORT

Local Climatological Data



MONTHLY SUMMARY

LATITUDE 46° 00' N LONGITUDE 123° 53' W ALTITUDE (GROUND) 5 FT. STANDARD TIME USED: PACIFIC 1400 00-0734

FEBRUARY 1979 ASTORIA, OREGON

[illegible]

• EXTREMELY POOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
1 TRACE AMOUNT
• ALSO ON AN EARLIER DATE. ON WATER-HEAVY PWD - VISIBILITY 1/4 MILE OR LESS.
PIECES FOR NINE DIRECTIONS AND TEND OF DEGREES CLIMAXED FROM THE NORTH. ON A CHL. DATE IN CAL. & MAY 12-16 ARE SITES ON 7 ON

MORE OBSERVATIONS PER DAY AT 5-MINUTE INTERVALS.
 FASTEST WIND KNOT SPEED AND FASTEST OBSERVED
 ONE-MINUTE VALUE WITH DIRECTION ARE IN TENS OF
 DEGREES. THE / WITH THE DIRECTION INDICATES
 PEAK GUST SPEED.
 ANY ERROR DETECTED WILL BE CORRECTED AND
 CHANGES IN SUMMARY DATA WILL BE INDICATED IN
 THE SUMMARY SUMMARY

SUMMARY BY HOURS

STATION	LOCAL TIME	LOCAL DATE	LOCAL TIME OF DAY	OBSERVATIONS							WIND, TIME OF DAY
				STATION PRESSURE IN.	TEMPERATURE			RELATIVE HUMIDITY %	WIND SPEED M.P.H.	DIRECTION	
					AIR °	WET °	SHADE °				
01	00	00	00	30.01	40	40	30	01	0.0	10	0.0
02	00	00	00	30.02	40	40	30	01	0.0	10	0.0
03	00	00	00	30.03	40	40	30	01	0.0	10	0.0
04	00	00	00	30.04	40	40	30	01	0.0	10	0.0
05	00	00	00	30.05	40	40	30	01	0.0	10	0.0
06	00	00	00	30.06	40	40	30	01	0.0	10	0.0
07	00	00	00	30.07	40	40	30	01	0.0	10	0.0
08	00	00	00	30.08	40	40	30	01	0.0	10	0.0
09	00	00	00	30.09	40	40	30	01	0.0	10	0.0
10	00	00	00	30.10	40	40	30	01	0.0	10	0.0
11	00	00	00	30.11	40	40	30	01	0.0	10	0.0
12	00	00	00	30.12	40	40	30	01	0.0	10	0.0
13	00	00	00	30.13	40	40	30	01	0.0	10	0.0
14	00	00	00	30.14	40	40	30	01	0.0	10	0.0
15	00	00	00	30.15	40	40	30	01	0.0	10	0.0
16	00	00	00	30.16	40	40	30	01	0.0	10	0.0
17	00	00	00	30.17	40	40	30	01	0.0	10	0.0
18	00	00	00	30.18	40	40	30	01	0.0	10	0.0
19	00	00	00	30.19	40	40	30	01	0.0	10	0.0
20	00	00	00	30.20	40	40	30	01	0.0	10	0.0
21	00	00	00	30.21	40	40	30	01	0.0	10	0.0
22	00	00	00	30.22	40	40	30	01	0.0	10	0.0
23	00	00	00	30.23	40	40	30	01	0.0	10	0.0
24	00	00	00	30.24	40	40	30	01	0.0	10	0.0

HOURLY PRECIPITATION (WATER EQUIVALENT IN INCHES)

[illegible]

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noaa

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA AND INFORMATION SERVICE

Daniel B. Mitchell
DIRECTOR, NATIONAL CLIMATE CENTER

USCOMM--NORR--ASHEVILLE

02 20 75

236

OBSERVATIONS AT 3-HOUR INTERVALS

[illegible]

NOTES

CEILING
1944 (1940-1942) 1943-1944

WEATHER

- 0 TOROWED
- 1 THUNDERSTORM
- 2 THUMB
- 3 THIN
- 4 THIN SHIMMERS
- 5 FREEZING CHILL
- 6 GRIZZLE
- 7 FREEZING GRIZZLE
- 8 SNOW
- 9 SNOW PELLETS
- A ICE CRYSTALS
- B SNOW SHIMMERS
- C SNOW GRAINS
- D ICE PELLETS
- E HAIL
- F FOG
- G ICE FOG
- H DRIZZLING FOG
- I DRIZZLING RAIN
- J DRIZZLING SNOW
- K DRIZZLING SPRAY
- L SMOKE
- M HAZE
- N DUST

4100

DIRECTIONS ARE THOSE FROM WHICH THE WIND BLOWS. INDICATED IN TERMS OF DEGREES FROM TRUE NORTH: I.E.: 09 FOR EAST. 18 FOR SOUTH. 27 FOR WEST. ENTRY OF 00 IN THE DIRECTION COLUMN INDICATES CALM.

SPEED IS EXPRESSED IN KNOTS.
MULTIPLY BY 1.15 TO CONVERT
TO MILES PER HOUR.

U.S. DEPARTMENT OF COMMERCE
NATIONAL CLIMATIC CENTER
FEDERAL BUILDING
ASHEVILLE, N.C. 28801

STATION
ALVERA GREEN
AN EQUAL OPPORTUNITY EMPLOYER

TEAMS & POSITIVE
TO GO

FOOTAGE AND PERMITS
U.S. DEPARTMENT OF COMMERCE

COM-210



FIRST CLASS



MARCH 1979

ASTORIA, OREGON

[illegible]

• EXTREME FOR THE MONTH - LAST OCCURRENCE IF
WINDY THIS QTR.
7 THOUSAND
• ALSO ON AN EARLIER DATE, OR DATES.
HEAVY FOG - VISIBILITY 1/4 MILE OR LESS.
FIGURES FOR NINE DIRECTIONS ARE TENS OF DE-
GREES CLOSENESS FROM TRUE NORTH. OO - CALM.
DATA IN CALS. 6 AND 12-15 ARE BASED ON 7 OR

NOTE OBSERVATIONS PER DAY AT 3-HOUR INTERVALS. FASTEST MILE PER HOUR SPEEDS ARE FASTEST OBSERVED ONE-MINUTE VALUES WITH DIRECTION AND IN TERMS OF NUMBER. THE / WITH THE DIRECTION INDICATES PEAK GUST SPEED.

ANY ERRORS DETECTED WILL BE CORRECTED AND CHANGES IN SUMMARY DATA WILL BE ANNOTATED IN THE ANNUAL SUMMARY

SUMMARY BY HOURS

TIME	LATITUDE	LONGITUDE	WIND DIRECTION	AVERAGES										SEA STATE	WIND DIRECTION		
				TEMPERATURE					RELATIVE HUMIDITY							WIND SPEED	DIRECTION
				AIR °F	SEA °F	WIND °F	RELATIVE HUMIDITY %	RELATIVE HUMIDITY %	RELATIVE HUMIDITY %	WIND SPEED	DIRECTION						
01	04	08	30	02	42	41	81	7.7	14	3	3						
04	08	30	03	41	41	40	81	7.0	13	3	3						
07	08	30	04	42	41	40	82	6.1	12	3	3						
10	08	30	05	43	41	40	81	5.6	20	4	4						
13	08	30	06	43	41	40	71	10.8	23	4	4						
16	08	30	07	43	41	40	73	12.4	24	4	4						
19	08	30	08	43	41	40	75	13.0	31	4	4						
22	08	30	09	43	41	40	75	12.4	31	4	4						

HOURLY PRECIPITATION (WATER EQUIVALENT IN INCHES)

[illegible]

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I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801.

noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA AND INFORMATION SERVICE

Daniel B. Mitchell
DIRECTOR, NATIONAL CLIMATE CENTER

USCINN--NORR--ASHEVILLE 04/29/78

[illegible]

SPEED IS EXPRESSED IN KNOTS.
MULTIPLY BY 1.15 TO CONVERT
TO MILES PER HOUR.

FIRST CLASS

APPENDIX D

HOURLY WEATHER OBSERVATIONS AT CLATSOP COUNTY AIRPORT,
ASTORIA, OREGON, ON DATES OF BAR TRANSITS

SURFACE WEATHER OBSERVATIONS

WFO ASTORIA, ORE

DATE _____

MAY 10 1978

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

TIME (LT)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (In.)	TEMP. (°F)	DEW PT. (°F)	WIND			ALTIM. ETER SET- TING (In.)	REMARKS AND SUPPLEMENTAL CODED DATA (13)
		SURFACE (1)	TOWER (4)					DIREC- TION (°)	SPEED (Kts)	CHAR- ACTER (In.)		
0056	M280VC	10			160	49	42	25	04		000	103 15//
0157	M280VC	10			160	49	41	28	06		000	
0158	M290VC	10			156	48	42	19	05		999	
0356	M320VC	12			153	48	42	18	07		998	807 15// 48 20001
/	72791 81807	690	22	15309	855	11	06807	63	144	20001	457480	
0457	M320VC	15			153	48	43	14	06		998	
0555	M320VC	12		L-	156	48	42	17	07		999	LB45
0612	M190KN 320VC	7		L-				18	07		999	L-0644X L-
0656	M450M230VC	10		L-	156	48	45	19	06		999	L-0644X L- 10300 17//
0727	65CT E200VC	4		R-F				23	07		000	
0755	65CT E250VC	5		R-F	160	49	46	25	05		000	LERBOS
0858	65CT E170KN 350VC	5		RW-	156	49	46	18	07		999	RE15B35
0926	75CT E35BKN 1000VC	10						18	07		999	FEW CU FRA 6 HND
0956	155CT E40BKN 800VC	15			153	51	46	20	07		998	RE05 FEW CU FRA 6 HND 60308 182/ 47
/	72791 82007	74	258	15311	6832	/	08603	03144	70820	20008	452470	
1058	175CT E35BKN 800VC	15			153	53	45	20	12		998	
1158	205CT E350VC	10		R-	149	52	45	18	07		997	RB35
1258	155CT E300VC	6		R-	149	52	47	18	13		997	60301 172/
1358	135CT E300VC	6		R-	146	51	46	18	08		996	
1412	135CT E250VC	10		R-				18	10		996	
1458	105CT E200VC	5		R-F	143	50	45	19	14	622	995	
1555	105CT M200VC	5		R-F	139	49	46	21	14	622	994	71017 172/ 53
/	72791 82114	586	16	13909	3742	/	08710	63130	71750	20025	453470	
1655	E10BKN 250VC	5		R-F	136	49	45	21	15	623	993	
1755	055CT 145CT E220VC	6		R-F	131	49	45	19	10		992	
	BKN 350VC											
1813	75CT E9BKN 200VC	2 1/2		R-F				18	12		990	(F1B1)
1855	75CT E9BKN 200VC	2 1/2		R-F	122	48	46	18	10		999	81714 172/
1945	75CT E90VC	4		R-F	119	49	47	18	10		993	R- 0644X R
2045	75CT E90VC	5		R-F	124	51	48	23	11	623	990	R- 0644X R R WND 1926/45
2117	75CT E95CT E15BKN	7			(6248)	24	09				991	
	300VC											
2155	75CT E15BKN 350VC	10		RW-	129	50	48	23	09		991	BKN SW RE05/ 307

STATION

WSO ASTORIA, ORE

SURFACE WEATHER OBSERVATIONS

DATE MAY 29 1978

TO CONVERT LST TO GM
ADD 9 hrs. SUBTRACT

TYPE	TIME (LST)	SKY AND CEILING (Height of Ceiling)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Inches)	TEMP. (°F)	DEW PT. (°F)	WIND			ALTIMETER SETTING (Inches)	REMARKS AND SUPPLEMENTAL CODED DATA (113)
			HORIZ. (1)	VERT. (2)					DIRECT SPEED (Kts.)	CHAR. VELOCITY (Kts.)	WAVE PERIOD (Secs.)		
R 0050	20 SCT 45 SCT	10				298	50	43	33	09	041	802 1800	
R 0155	20 SCT 45 SCT	10				298	50	42	34	08	041		
R 0255	20 SCT	10				297	49	42	33	08	041		
K 0355	20 SCT	10				297	46	42	33	05	041	602 1100 46 20002	
—	72791 13305	66021			29708	11500	06602	63	288		20002 46146 0		
R 0455	20 SCT	15				300	41	38	13	04	042	F BNK ORVR N-E	
R 0555	20 SCT	15				302	42	40	12	04	042	F BNK ORVR N-E	
R 0655	30 SCT	15				303	48	45	13	04	043	107 1500	
R 0758	20 SCT E 30 KRN	15				305	52	46	35	04	043		
R 0858	20 SCT E 35 BKN	15				302	54	44	32	06	042		
R 0958	25 SCT E 35 KRN	20				303	56	44	36	04	043	1500 1800 40	
—	72791 63604	80021			20313	68500	07500	63295	45840		0		
R 1055	30 SCT E 40 BKN	20				300	57	46	32	11	042		
R 1158	E 30 BKN 35 KRN	20				300	57	46	31	12	042		
R 1258	30 SCT 35 SCT 250 SCT	20				297	58	45	32	14	041	807 1801	
R 1358	35 SCT	20				298	58	45	31	13	041		
R 1457	35 SCT	20				298	57	43	31	13	041		
R 1556	35 SCT	20				295	56	43	30	12	040	802 1100 59	
—	72791 23012	80021			29513	21600	06802	63286	45940		0		
R 1658	415 J	20				292	54	42	30	14	039		
R 1757	285 J 405 J	20				288	54	43	31	12	038		
R 1856	225 J 2505 J	20				288	53	43	33	16	038	607 1101	
R 1955	265 J 250 - RKN	15				288	51	43	32	10	038		
R 2058	235 J 250 - RKN	15				288	51	43	32	10	037		
B 2150	M 25 BKN 250 Cg	15							31	04	038	(F/B)	
R 2156	M 25 BKN 2500 Cg	15				288	51	42	30	06	038	400 1508 59	
—	72791 83006	74031			28811	65508	06400	63279	45940		0		
R 2255	M 23 BKN 2500 Cg	12				288	50	42	01	05	038		
R 2356	19 SCT	10				292	45	41	13	04	039		

univariate observation. in WHO code terms $P_{i,j}^1D_{i,j}$ is entered on line following related observation.

Nidhi VV... PPTT N₄C N₄C₄T₁T₄PPO 6P₂P₂P₂P₂ TRRR : 6' CH₂H₂ 9'Season 2R₂A₂R₂A₂ 3P₂P₂H₂H₂ 6-4-PW-H-N= 4T₂T₂T₂

U.S. GOVERNMENT PRINTING OFFICE

JUN 05 1973

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

U. S. GOVERNMENT PRINTING OFFICE: 1979

STATION

WSO ASTORIA, ORE

SURFACE WEATHER OBSERVATIONS

DATE JUN 07 1978

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

TYPE	TIME	SKY AND CEILING (Thousands of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Hpa)	TEMP (°C)	DEW PT. (°C)	WIND			ALTIM. ETER. SET- TING (Hpa)	REMARKS AND SUPPLEMENTAL CODED DATA
			SURFACE	FORECAST					DIRECTION (°)	SPEED (Kts)	MAX GUST (Kts)		
S	0040	M3 OVC	5		L-				16	05		017	CFM
R	0056	M3 OVC	5		L-	720	57	55	16	07		018	2400 16//
S	0115	720 M7 OVC	3		R-F				16	06		018	
R	0156	1 SCT M5 OVC	3		R-F	722	57	56	19	03		019	LEDRB10
S	0240	3 SCT M10 OVC	5		R-F				24	06		019	CFM
R	0356	2 SCT M12 OVC	5		R-F	724	58	56	25	04		019	
R	0556	3 SCT M18 OVC	7		R-	726	57	54	22	04		020	10504 16// 57 20004
/	/	72791 87204 61615	22614	86211	72105	63217	70460	20004	46857	0			
R	0456	20 BKN 250 OVC	10			729	57	55	18	04		021	REH FEW STER E-SE
R	0556	M19 BKN 250 OVC	10			734	58	55	18	03		022	FEW CUFR 3ND R-SE
R	0656	M18 BKN 250 OVC	15			737	60	56	23	04		023	FEW CUFR 5ND E-S/11200 1801
R	0755	M16 BKN 250 BKN	15			741	61	55	28	06		024	
R	0857	M23 BKN 250 BKN	15			741	62	55	24	04		024	
R	0956	M25 BKN 250 BKN	15			746	63	55	27	08		026	30850 1508 57
/	/	72791 62708	74022	24617	55508	63237	70060	20004	46557	0	1330		
R	1057	165 J M26 BKN 250 BKN	15			751	65	55	24	06		027	70060 20004 46557 0 70060
S	1118	165 J 265 J F250 BKN	15						30	07		027	
R	1156	165 J 265 J F250 BKN	15			751	68	55	34	12		027	
R	1255	165 J 265 J F250 J	15			751	67	55	30	10		027	105 1801
R	1357	165 J 265 J F250 J	15			751	66	55	31	08		027	
R	1458	250 - J	15			748	68	56	29	08		026	FEN CU
R	1555	250 - OVC	20			744	67	55	27	09		025	807 1107 69
/	/	72791 87209	8002	24419	11907	13807	63235	20004	46957	0			
K	1658	250 - OVC	20			744	65	53	28	11		025	
K	1758	250 - OVC	20			741	64	52	28	10		024	
K	1857	250 - BKN	20			741	62	53	29	08		024	603 1008
K	1958	250 - BKN	20			741	57	53	29	07		024	
K	2058	15 SCT 250 SCT	15			742	57	53	33	11		025	
R	2158	13 SCT 250 SCT	10			742	59	54	33	09		025	102 1501 67
/	/	72771 33309	36021	24215	25401	12102	63234	20004	46957	0			
R	2258	12 SCT	10			741	58	53	33	07		024	
R	2356	12 SCT	10			737	57	51	24	03		023	

STATION

WSO ASTORIA, ORE

SURFACE WEATHER OBSERVATIONS

DATE _____

JUN 21 1978

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

TIME	SKY AND CEILING (Hundreds of Feet)	VISIBILITY Miles		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (mb)	TEMP (°F)	DEW PT. (°F)	WIND		ALTIMETER SET- TING (Inch)	REMARKS AND SUPPLEMENTAL CODED DATA
		SURFACE	TOPO					DIRECTION (° True)	SPEED (Kts)		
R 0056	E 17 OVC	10			190	56	50	22	04	009	803 15//
R 0157	E 17 OVC	10			188	56	50	21	06	009	
R 0257	E 19 OVC	10			187	57	50	17	05	008	
R 0355	E 18 OVC	10			188	56	50	17	04	009	502 15// 55
/ /	72791 81704	66022	10813	854//	10542	63180				467550	
R 0457	E 18 OVC	10			190	56	50	18	04	009	
R 0558	E 16 OVC	10			190	56	50	19	06	009	
R 0658	E 13 OVC	10			195	57	51	26	04	011	307 15//
R 0755	M 15 OVC	10			200	57	51	27	05	012	
R 0855	155CT M 25 OVC	10			200	59	53	25	05	012	SHL BKN OVC
R 0955	155CT M 25 OVC	12			200	61	53	23	08	012	SHL BKN OVC / 105 1500
/ /	72791 72308	66022	20016	75465	12105	63191				462550	
R 1055	155CT M 25 OVC	12			204	61	53	24	10	013	SHL BKN OVC
R 1155	105CT 155CT M 25 OVC	10			205	62	54	24	09	014	OCAL SHL BKN OVC
S 1232	45CT 105CT E 15 OVC	8		L-				24	05	014	OCAL SHL BKN OVC / 14
/											012 ABT OVC 038
R 1255	45CT E 18 OVC	8		L-	205	65	56	23	08	014	1830 OCAL BKN OVC / 105 1500
R 1355	65CT E 18 OVC	10			205	61	54	25	10	014	1E15
R 1455	65CT E 18 OVC	10			206	60	53	25	08	014	
R 1555	145CT M 22 OVC	10			204	61	54	24	07	013	80200 15// 66
/ /	72791 82407	66025	20416	854//	12802	63195				70030	466550
R 1655	45CT M 22 OVC	8		RW-	200	59	55	23	08	012	R840
S 1716	45CT M 22 OVC	10						24	07	012	RW 05NT N AND E FEW STFR 7 HND SW
R 1757	45CT M 22 OVC	4		RW-F	200	58	54	24	08	012	RE10B35 FEW STFR 7 HND W-NW
R 1857	105CT M 15 OVC	7			200	57	54	23	07	012	THN SPTS 10 OVC 1684 LWR E-S RE 15, 60300 15// 4 HND
/											
R 1957	M 15 BKN 22 OVC	7		RW-	197	56	52	27	07	011	R830 FEW STFR 7 HND
R 2055	M 21 OVC	10			197	56	53	25	07	011	RE10 FEW STFR 7 HND NW
R 2154	M 19 OVC	5		RW-F	197	54	52	26	05	011	R835 FEW STFR 9 HND / 60300 15// 66
/ /	72791 82605	58908	19712	852//	11603	63183				70010	466540
R 2252	M 22 OVC	10			193	54	52	24	03	010	RE20 BKN OVC
R 2357	155CT E 22 OVC	10			192	55	52	30	06	010	

WFO-10A
15-78

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

STATION

WSO ASTORIA, ORE

SURFACE WEATHER OBSERVATIONS

DATE

JUN 23 1978

TO CONVERT LST TO GMT
ADD 8 HRS. SUBTRACT

TIME	TYPE	SKY AND CEILING (Hundred Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Inches)	TEMP. (F)	DEW PT. (F)	WIND			ALTIMETER SETTING (Inches)	REMARKS AND SUPPLEMENTAL CODED DATA
			STATUTE	NAUTICAL					DIRECTION (True)	SPEED (Kts)	CHARACTER		
0056	R	E30LKN 55 OVC	8		NW-	161	53	50	12	04		001	RB20 60300 15//
0158	R	30SET E50LKN	10			161	52	49	08	03		001	RE40
0258	R	E50LKN	10			163	51	49	14	03		001	
0356	R	30SET E50LKN	10			165	50	48	12	04		002	30300 1500 50 20001
0456	R	72771 51204 66028	8		16510	55500	09303	63156				002	70030 20001 46450 @
0558	R	15SET E50LKN 55BKN	10			166	50	48	10	04		002	
0658	R	10SET 35SET E40LKN	10			171	52	49	09	03		004	
0758	R	15SET E40BKN	15			175	54	51	11	04		005	310 1800
0858	R	165J F50BKN 250LKN	15			180	57	50	12	04		006	
0958	R	185J F45LKN	15			183	59	49	08	03		007	
1058	R	185J F45LKN	15			183	62	48	03	03		007	108 1800 50
1158	R	72791 60303 74022	18		18317	63400	09108	63174				008	46450 @
1258	R	205J F45LKN	15			187	59	50	23	06		009	
1358	R	185J F40LKN	15			187	63	51	22	06		008	
1458	R	235J F45LKN	15			188	65	52	25	05		009	305 1800
1558	R	205J F50BKN	15			190	64	50	26	08		009	
1658	R	385J F50BKN	15			192	65	51	24	12		010	
1758	R	70BKN											
1858	R	E50 BKN	15			193	62	50	26	12		010	205 1800 67
1958	R	72791 62612 74022	19		19317	63500	10205	63185				010	46750 @
2058	R	E38 BKN	15			193	60	49	24	07		010	RUAL DSNT SE
2158	R	M38 OVC	15			190	59	49	23	05		009	
2258	R	M38 OVC	15			193	58	49	24	04		010	BINOVC S-SW/500 1800
2358	R	M38 OVC	15			193	58	50	23	03		010	BINOVC
2458	R	E38 BKN	10			193	57	50	18	03		010	
2558	R	E50 BKN	10			195	56	50	20	03		011	302 1500 67
2658	R	72791 72003 66022	19		19513	75500	10302	63186				010	46750 @
2758	R	E50 OVC	10			193	55	50	18	04		010	BINOVC
2858	R	70SET	12			192	52	50	15	03		010	

FORM 100-10A (Rev. 1-78) PREPARED BY THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE

FORM 100-10A (Rev. 1-78) PREPARED BY THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE

U.S. GOVERNMENT PRINTING OFFICE: 1978

STATION

WSO ASTORIA, ORE

SURFACE WEATHER OBSERVATIONS

DATE _____

JUN 24 1978

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

TIME	TYPE	SKY AND CEILING (Handwritten)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (In.)	TEMP. (°F)	DEW PT. (°F)	WIND		ALTIM. ETER SET TIME (In.)	REMARKS AND SUPPLEMENTAL CODED DATA (119)
			SMALL	TOTAL					DIRECT	SPEED		
705	R 0155	705CT	12			190	50	47	18	04	009	705 1030
705	R 0155	705CT	12			190	49	47	13	04	009	
705	R 0155	705CT	12			190	48	46	11	05	009	
705	R 0155	705CT	15			190	47	45	10	03	009	FEW Sc / 400 1530 47
7291	21003	74021	19008			155	30	07	400		63	181 46747(D)
2205	R 0155	2205CT	20			190	46	45	12	04	009	FEW Sc AC H2303
185	R 0155	185CT 1000 230	20			195	49	47	10	03	011	
175	R 0155	175CT 555 100	20			193	53	48	00	00	010	TCU Pw S / 003 1838
175	R 0155	175CT 555 1000	20			197	59	51	23	05	011	TCU S
225	R 0855	225CT 405 1000	25			200	60	50	26	05	012	
275	R 0956	275CT 405 250	25			204	64	51	25	07	013	210 1801 46
225	72791	22507	82020	20	418	285	01	112	10		63	195 467460
235	R 1057	235CT 455 250	25			207	64	52	24	09	014	
235	R 1158	235CT 455 1000	25			210	65	51	24	10	015	
255	R 1256	255CT 455 1000	25			214	65	50	25	12	016	210 1830
255	R 1355	255CT 455 1000	25			217	63	50	25	08	017	
255	72791	22410	82020	22418		285	01	102	10		63	215 467460
255	R 1655	225CT 455 250	25			226	63	50	24	11	020	
255	R 1755	195CT 385 250	25			227	62	51	28	10	020	
255	R 1855	195CT E380KN 2500KN	25			227	60	50	24	09	020	FEW TCU NE-SE / 103 1801
255	R 1955	195CT 385CT	20			229	58	50	27	06	021	FEW TCU NE-SE
255	72791	62203	69021	23113		184	06	09	03		63	222 467460
255	R 2055	165CT M280KN	12			231	55	50	19	03	021	
255	R 2156	165CT M280KN	12			231	55	50	13	04	021	
255	R 2256	165CT M280KN	12			231	55	50	13	04	021	

01-10A
5-74

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

STATION

WSO ASTORIA, ORE

SURFACE WEATHER OBSERVATIONS

DATE

NOV 1 1978

TO CONVERT LST TO GMT
ADD 8 HRS. SUBTRACT

TIME EST.	SKY AND CEILING (Number of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (In.)	TEMP. (°F)	DEW PT. (°F)	WIND			ALTIM. ETER SET- TING (In.)	REMARKS AND SUPPLEMENTAL CODED DATA (1-3)
		SURFACE	TOWER					DIRECT TENSION (Kts.)	SPEED (Kts.)	HAUL TENSION (Kts.)		
R 0031	CLR	12			227	36	32	11	04		020	520R
R 0158	250-Sct	12			227	34	32	11	04		023	
R 0257	250-Sct	12			224	37	34	05	05		022	PTCHY F
R 0356	250-Sct	12			234	35	31	14	05		022	PTCHY F / 107 1001 33
/	72791	21405	69020	23402	00901	51107	63225	461330				
R 0455	250-Sct	12			234	37	30	00	00		022	PTCHY F
R 0554	CLR	15			234	32	29	09	04		022	PTCHY F
R 0656	250-Sct	25			237	30	28	15	03		023	PTCHY F / 303 1001
R 0757	250-Sct	25			241	33	30	12	06		024	PTCHY F
R 0857	250-Sct	10			242	42	38	07	03		025	
R 0955	CLR	12			246	47	41	07	04		026	108 30
/	72791	00704	69020	24608	00900	05108	63237	44730	5401013240			
R 1054	CLR	15			241	54	40	00	00		024	
R 1157	CLR	20			236	55	44	02	06		023	
R 1256	CLR	20			227	58	41	36	05		020	819 1001
R 1356	CLR	15			227	58	42	24	08		020	
R 1456	CLR	15			227	58	45	27	07		020	
L 1506	CLR	15			57	45	24	07			020	FEW CI (ACFT MISHAP)
R 1555	CLR	15			226	56	46	23	04		020	802 59
/	72791	02304	74020	22613	00900	08502	63217	459300				
R 1655	CLR	10			224	51	45	18	03		019	FEW CI HAZY
R 1755	CLR	10			224	44	41	17	06		019	FEW CI PTCHY GF RAG
R 1855	CLR	10			224	42	39	00	00		023	PTCHY GF / 307
R 1955	CLR	10			231	40	38	12	05		021	PTCHY GF
R 2055	CLR	8			231	39	37	12	06		021	PTCHY GF
R 2154	CLR	8			222	37	34	12	05		022	500 59
/	72791	01205	63020	23203	00900	01500	63224	459300				
R 2254	16Sct	8			231	39	36	10	06		021	
R 2356	M19 Bw	10			227	40	38	13	07		021	

WIND: 10-15 Kts. VV=VV PPTT NNC-CCCH T₁ T₂ T₃ T₄ T₅ T₆ T₇ T₈ T₉ T₁₀ T₁₁ T₁₂ T₁₃ T₁₄ T₁₅ T₁₆ T₁₇ T₁₈ T₁₉ T₂₀ T₂₁ T₂₂ T₂₃ T₂₄ T₂₅ T₂₆ T₂₇ T₂₈ T₂₉ T₃₀ T₃₁ T₃₂ T₃₃ T₃₄ T₃₅ T₃₆ T₃₇ T₃₈ T₃₉ T₄₀ T₄₁ T₄₂ T₄₃ T₄₄ T₄₅ T₄₆ T₄₇ T₄₈ T₄₉ T₅₀ T₅₁ T₅₂ T₅₃ T₅₄ T₅₅ T₅₆ T₅₇ T₅₈ T₅₉ T₆₀ T₆₁ T₆₂ T₆₃ T₆₄ T₆₅ T₆₆ T₆₇ T₆₈ T₆₉ T₇₀ T₇₁ T₇₂ T₇₃ T₇₄ T₇₅ T₇₆ T₇₇ T₇₈ T₇₉ T₈₀ T₈₁ T₈₂ T₈₃ T₈₄ T₈₅ T₈₆ T₈₇ T₈₈ T₈₉ T₉₀ T₉₁ T₉₂ T₉₃ T₉₄ T₉₅ T₉₆ T₉₇ T₉₈ T₉₉ T₁₀₀ T₁₀₁ T₁₀₂ T₁₀₃ T₁₀₄ T₁₀₅ T₁₀₆ T₁₀₇ T₁₀₈ T₁₀₉ T₁₁₀ T₁₁₁ T₁₁₂ T₁₁₃ T₁₁₄ T₁₁₅ T₁₁₆ T₁₁₇ T₁₁₈ T₁₁₉ T₁₂₀ T₁₂₁ T₁₂₂ T₁₂₃ T₁₂₄ T₁₂₅ T₁₂₆ T₁₂₇ T₁₂₈ T₁₂₉ T₁₃₀ T₁₃₁ T₁₃₂ T₁₃₃ T₁₃₄ T₁₃₅ T₁₃₆ T₁₃₇ T₁₃₈ T₁₃₉ T₁₄₀ T₁₄₁ T₁₄₂ T₁₄₃ T₁₄₄ T₁₄₅ T₁₄₆ T₁₄₇ T₁₄₈ T₁₄₉ T₁₅₀ T₁₅₁ T₁₅₂ T₁₅₃ T₁₅₄ T₁₅₅ T₁₅₆ T₁₅₇ T₁₅₈ T₁₅₉ T₁₆₀ T₁₆₁ T₁₆₂ T₁₆₃ T₁₆₄ T₁₆₅ T₁₆₆ T₁₆₇ T₁₆₈ T₁₆₉ T₁₇₀ T₁₇₁ T₁₇₂ T₁₇₃ T₁₇₄ T₁₇₅ T₁₇₆ T₁₇₇ T₁₇₈ T₁₇₉ T₁₈₀ T₁₈₁ T₁₈₂ T₁₈₃ T₁₈₄ T₁₈₅ T₁₈₆ T₁₈₇ T₁₈₈ T₁₈₉ T₁₉₀ T₁₉₁ T₁₉₂ T₁₉₃ T₁₉₄ T₁₉₅ T₁₉₆ T₁₉₇ T₁₉₈ T₁₉₉ T₂₀₀ T₂₀₁ T₂₀₂ T₂₀₃ T₂₀₄ T₂₀₅ T₂₀₆ T₂₀₇ T₂₀₈ T₂₀₉ T₂₁₀ T₂₁₁ T₂₁₂ T₂₁₃ T₂₁₄ T₂₁₅ T₂₁₆ T₂₁₇ T₂₁₈ T₂₁₉ T₂₂₀ T₂₂₁ T₂₂₂ T₂₂₃ T₂₂₄ T₂₂₅ T₂₂₆ T₂₂₇ T₂₂₈ T₂₂₉ T₂₃₀ T₂₃₁ T₂₃₂ T₂₃₃ T₂₃₄ T₂₃₅ T₂₃₆ T₂₃₇ T₂₃₈ T₂₃₉ T₂₄₀ T₂₄₁ T₂₄₂ T₂₄₃ T₂₄₄ T₂₄₅ T₂₄₆ T₂₄₇ T₂₄₈ T₂₄₉ T₂₅₀ T₂₅₁ T₂₅₂ T₂₅₃ T₂₅₄ T₂₅₅ T₂₅₆ T₂₅₇ T₂₅₈ T₂₅₉ T₂₆₀ T₂₆₁ T₂₆₂ T₂₆₃ T₂₆₄ T₂₆₅ T₂₆₆ T₂₆₇ T₂₆₈ T₂₆₉ T₂₇₀ T₂₇₁ T₂₇₂ T₂₇₃ T₂₇₄ T₂₇₅ T₂₇₆ T₂₇₇ T₂₇₈ T₂₇₉ T₂₈₀ T₂₈₁ T₂₈₂ T₂₈₃ T₂₈₄ T₂₈₅ T₂₈₆ T₂₈₇ T₂₈₈ T₂₈₉ T₂₉₀ T₂₉₁ T₂₉₂ T₂₉₃ T₂₉₄ T₂₉₅ T₂₉₆ T₂₉₇ T₂₉₈ T₂₉₉ T₃₀₀ T₃₀₁ T₃₀₂ T₃₀₃ T₃₀₄ T₃₀₅ T₃₀₆ T₃₀₇ T₃₀₈ T₃₀₉ T₃₁₀ T₃₁₁ T₃₁₂ T₃₁₃ T₃₁₄ T₃₁₅ T₃₁₆ T₃₁₇ T₃₁₈ T₃₁₉ T₃₂₀ T₃₂₁ T₃₂₂ T₃₂₃ T₃₂₄ T₃₂₅ T₃₂₆ T₃₂₇ T₃₂₈ T₃₂₉ T₃₃₀ T₃₃₁ T₃₃₂ T₃₃₃ T₃₃₄ T₃₃₅ T₃₃₆ T₃₃₇ T₃₃₈ T₃₃₉ T₃₄₀ T₃₄₁ T₃₄₂ T₃₄₃ T₃₄₄ T₃₄₅ T₃₄₆ T₃₄₇ T₃₄₈ T₃₄₉ T₃₅₀ T₃₅₁ T₃₅₂ T₃₅₃ T₃₅₄ T₃₅₅ T₃₅₆ T₃₅₇ T₃₅₈ T₃₅₉ T₃₆₀ T₃₆₁ T₃₆₂ T₃₆₃ T₃₆₄ T₃₆₅ T₃₆₆ T₃₆₇ T₃₆₈ T₃₆₉ T₃₇₀ T₃₇₁ T₃₇₂ T₃₇₃ T₃₇₄ T₃₇₅ T₃₇₆ T₃₇₇ T₃₇₈ T₃₇₉ T₃₈₀ T₃₈₁ T₃₈₂ T₃₈₃ T₃₈₄ T₃₈₅ T₃₈₆ T₃₈₇ T₃₈₈ T₃₈₉ T₃₉₀ T₃₉₁ T₃₉₂ T₃₉₃ T₃₉₄ T₃₉₅ T₃₉₆ T₃₉₇ T₃₉₈ T₃₉₉ T₄₀₀ T₄₀₁ T₄₀₂ T₄₀₃ T₄₀₄ T₄₀₅ T₄₀₆ T₄₀₇ T₄₀₈ T₄₀₉ T₄₁₀ T₄₁₁ T₄₁₂ T₄₁₃ T₄₁₄ T₄₁₅ T₄₁₆ T₄₁₇ T₄₁₈ T₄₁₉ T₄₂₀ T₄₂₁ T₄₂₂ T₄₂₃ T₄₂₄ T₄₂₅ T₄₂₆ T₄₂₇ T₄₂₈ T₄₂₉ T₄₃₀ T₄₃₁ T₄₃₂ T₄₃₃ T₄₃₄ T₄₃₅ T₄₃₆ T₄₃₇ T₄₃₈ T₄₃₉ T₄₄₀ T₄₄₁ T₄₄₂ T₄₄₃ T₄₄₄ T₄₄₅ T₄₄₆ T₄₄₇ T₄₄₈ T₄₄₉ T₄₅₀ T₄₅₁ T₄₅₂ T₄₅₃ T₄₅₄ T₄₅₅ T₄₅₆ T₄₅₇ T₄₅₈ T₄₅₉ T₄₆₀ T₄₆₁ T₄₆₂ T₄₆₃ T₄₆₄ T₄₆₅ T₄₆₆ T₄₆₇ T₄₆₈ T₄₆₉ T₄₇₀ T₄₇₁ T₄₇₂ T₄₇₃ T₄₇₄ T₄₇₅ T₄₇₆ T₄₇₇ T₄₇₈ T₄₇₉ T₄₈₀ T₄₈₁ T₄₈₂ T₄₈₃ T₄₈₄ T₄₈₅ T₄₈₆ T₄₈₇ T₄₈₈ T₄₈₉ T₄₉₀ T₄₉₁ T₄₉₂ T₄₉₃ T₄₉₄ T₄₉₅ T₄₉₆ T₄₉₇ T₄₉₈ T₄₉₉ T₅₀₀ T₅₀₁ T₅₀₂ T₅₀₃ T₅₀₄ T₅₀₅ T₅₀₆ T₅₀₇ T₅₀₈ T₅₀₉ T₅₁₀ T₅₁₁ T₅₁₂ T₅₁₃ T₅₁₄ T₅₁₅ T₅₁₆ T₅₁₇ T₅₁₈ T₅₁₉ T₅₂₀ T₅₂₁ T₅₂₂ T₅₂₃ T₅₂₄ T₅₂₅ T₅₂₆ T₅₂₇ T₅₂₈ T₅₂₉ T₅₃₀ T₅₃₁ T₅₃₂ T₅₃₃ T₅₃₄ T₅₃₅ T₅₃₆ T₅₃₇ T₅₃₈ T₅₃₉ T₅₄₀ T₅₄₁ T₅₄₂ T₅₄₃ T₅₄₄ T₅₄₅ T₅₄₆ T₅₄₇ T₅₄₈ T₅₄₉ T₅₅₀ T₅₅₁ T₅₅₂ T₅₅₃ T₅₅₄ T₅₅₅ T₅₅₆ T₅₅₇ T₅₅₈ T₅₅₉ T₅₆₀ T₅₆₁ T₅₆₂ T₅₆₃ T₅₆₄ T₅₆₅ T₅₆₆ T₅₆₇ T₅₆₈ T₅₆₉ T₅₇₀ T₅₇₁ T₅₇₂ T₅₇₃ T₅₇₄ T₅₇₅ T₅₇₆ T₅₇₇ T₅₇₈ T₅₇₉ T₅₈₀ T₅₈₁ T₅₈₂ T₅₈₃ T₅₈₄ T₅₈₅ T₅₈₆ T₅₈₇ T₅₈₈ T₅₈₉ T₅₉₀ T₅₉₁ T₅₉₂ T₅₉₃ T₅₉₄ T₅₉₅ T₅₉₆ T₅₉₇ T₅₉₈ T₅₉₉ T₆₀₀ T₆₀₁ T₆₀₂ T₆₀₃ T₆₀₄ T₆₀₅ T₆₀₆ T₆₀₇ T₆₀₈ T₆₀₉ T₆₁₀ T₆₁₁ T₆₁₂ T₆₁₃ T₆₁₄ T₆₁₅ T₆₁₆ T₆₁₇ T₆₁₈ T₆₁₉ T₆₂₀ T₆₂₁ T₆₂₂ T₆₂₃ T₆₂₄ T₆₂₅ T₆₂₆ T₆₂₇ T₆₂₈ T₆₂₉ T₆₃₀ T₆₃₁ T₆₃₂ T₆₃₃ T₆₃₄ T₆₃₅ T₆₃₆ T₆₃₇ T₆₃₈ T₆₃₉ T₆₄₀ T₆₄₁ T₆₄₂ T₆₄₃ T₆₄₄ T₆₄₅ T₆₄₆ T₆₄₇ T₆₄₈ T₆₄₉ T₆₅₀ T₆₅₁ T₆₅₂ T₆₅₃ T₆₅₄ T₆₅₅ T₆₅₆ T₆₅₇ T₆₅₈ T₆₅₉ T₆₆₀ T₆₆₁ T₆₆₂ T₆₆₃ T₆₆₄ T₆₆₅ T₆₆₆ T₆₆₇ T₆₆₈ T₆₆₉ T₆₇₀ T₆₇₁ T₆₇₂ T₆₇₃ T₆₇₄ T₆₇₅ T₆₇₆ T₆₇₇ T₆₇₈ T₆₇₉ T₆₈₀ T₆₈₁ T₆₈₂ T₆₈₃ T₆₈₄ T₆₈₅ T₆₈₆ T₆₈₇ T₆₈₈ T₆₈₉ T₆₉₀ T₆₉₁ T₆₉₂ T₆₉₃ T₆₉₄ T₆₉₅ T₆₉₆ T₆₉₇ T₆₉₈ T₆₉₉ T₇₀₀ T₇₀₁ T₇₀₂ T₇₀₃ T₇₀₄ T₇₀₅ T₇₀₆ T₇₀₇ T₇₀₈ T₇₀₉ T₇₁₀ T₇₁₁ T₇₁₂ T₇₁₃ T₇₁₄ T₇₁₅ T₇₁₆ T₇₁₇ T₇₁₈ T₇₁₉ T₇₂₀ T₇₂₁ T₇₂₂ T₇₂₃ T₇₂₄ T₇₂₅ T₇₂₆ T₇₂₇ T₇₂₈ T₇₂₉ T₇₃₀ T₇₃₁ T₇₃₂ T₇₃₃ T₇₃₄ T₇₃₅ T₇₃₆ T₇₃₇ T₇₃₈ T₇₃₉ T₇₄₀ T₇₄₁ T₇₄₂ T₇₄₃ T₇₄₄ T₇₄₅ T₇₄₆ T₇₄₇ T₇₄₈ T₇₄₉ T₇₅₀ T₇₅₁ T₇₅₂ T₇₅₃ T₇₅₄ T₇₅₅ T₇₅₆ T₇₅₇ T₇₅₈ T₇₅₉ T₇₆₀ T₇₆₁ T₇₆₂ T₇₆₃ T₇₆₄ T₇₆₅ T₇₆₆ T₇₆₇ T₇₆₈ T₇₆₉ T₇₇₀ T₇₇₁ T₇₇₂ T₇₇₃ T₇₇₄ T₇₇₅ T₇₇₆ T₇₇₇ T₇₇₈ T₇₇₉ T₇₈₀ T₇₈₁ T₇₈₂ T₇₈₃ T₇₈₄ T₇₈₅ T₇₈₆ T₇₈₇ T₇₈₈ T₇₈₉ T₇₉₀ T₇₉₁ T₇₉₂ T₇₉₃ T₇₉₄ T₇₉₅ T₇₉₆ T₇₉₇ T₇₉₈ T₇₉₉ T₈₀₀ T₈₀₁ T₈₀₂ T₈₀₃ T₈₀₄ T₈₀₅ T₈₀₆ T₈₀₇ T₈₀₈ T₈₀₉ T₈₁₀ T₈₁₁ T₈₁₂ T₈₁₃ T₈₁₄ T₈₁₅ T₈₁₆ T₈₁₇ T₈₁₈ T₈₁₉ T₈₂₀ T₈₂₁ T₈₂₂ T₈₂₃ T₈₂₄ T₈₂₅ T₈₂₆ T₈₂₇ T₈₂₈ T₈₂₉ T₈₃₀ T₈₃₁ T₈₃₂ T₈₃₃ T₈₃₄ T₈₃₅ T₈₃₆ T₈₃₇ T₈₃₈ T₈₃₉ T₈₄₀ T₈₄₁ T₈₄₂ T₈₄₃ T₈₄₄ T₈₄₅ T₈₄₆ T₈₄₇ T₈₄₈ T₈₄₉ T₈₅₀ T₈₅₁ T₈₅₂ T₈₅₃ T₈₅₄ T₈₅₅ T₈₅₆ T₈₅₇ T₈₅₈ T₈₅₉ T₈₆₀ T₈₆₁ T₈₆₂ T₈₆₃ T₈₆₄ T₈₆₅ T₈₆₆ T₈₆₇ T₈₆₈ T₈₆₉ T₈₇₀ T₈₇₁ T₈₇₂ T₈₇₃ T₈₇₄ T₈₇₅ T₈₇₆ T₈₇₇ T₈₇₈

MP1-10A
1-578

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

STATION

WSO ASTORIA, ORE

SURFACE WEATHER OBSERVATIONS

DATE

NOV 4 1978

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

TYPE	TIME (LST)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Hpa.)	TEMP. (°F)	DEW PT. (°F)	WIND			ALTIM. ETER SET- TING (Inch.)	REMARKS AND SUPPLEMENTAL CODED DATA (13)
			SURFACE	TOWER					DIRECT	SPEED	CHAR- ACTER		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
R	0015	M22 OVC	10		RW-	214	46	45	26	15	016	27510 1511	
R	0056	M22 BKN 38 BKN	12		RW-	217	49	44	28	11	017	228KN V SCT	
S	0218	22 SCT 38 SCT	12						30	12	018		
R	0255	22 SCT 38 SCT	12			227	49	43	26	09	020	RE 10	
R	0338	M22 BKN	12			241	50	45	29	15	024	22711 1500 48 20102	
/	/	72791 62915	69038	24110		65500		07227	63232	71120	20102	460480	
R	0455	M22 BKN 38 OVC	12			258	50	40	33	15	029	BKN OVC	
R	0558	M26 BKN 38 BKN	12			271	47	40	28	03	033		
S	0632	CLR	12						36	07	034		
R	0654	CLR	12			275	47	37	36	09	034	234 1500	
R	0755	M38 BKN	15			288	44	40	24	03	038		
R	0856	20 SCT 40 SCT 250 SCT	15			300	50	39	32	08	042		
R	0958	25 SCT 40 SCT 250 SCT	15			302	51	39	30	12	042	127 1801 44	
/	/	72791 43012	74031	30211		38501	04127	63293	20067	45644	0		
R	1058	25 SCT 250 SCT	20			297	53	40	34	09	041		
R	1155	30 SCT 250 SCT	20			297	53	38	32	10	041		
R	1255	30 SCT 250 SCT	20			298	54	40	31	13	041	503 1101	
R	1355	30 SCT 250 SCT	20			278	53	39	30	10	041		
R	1455	35 SCT 100 SCT 250 SCT	20			295	52	38	32	10	040		
R	1555	30 SCT 100 SCT 250-BKN	20			298	51	37	31	10	041	500 1136 54	
/	/	72791 73110	80031	29811		11536	03500	63390	20065	45444	0		
R	1655	30 SCT 100 SCT 250-BKN	15			302	48	38	33	09	042		
R	1757	30 SCT 100 SCT 250-BKN	15			300	48	38	01	05	042		
R	1856	30 SCT 100 SCT 250-BKN	15			302	48	37	35	05	042	003 1831	
R	1958	30 SCT 100 SCT 250 SCT	15			298	40	37	13	06	041		
R	2057	30 SCT 100 SCT 250 SCT	15			302	38	35	13	05	042		
R	2156	30 SCT 250 SCT	12			302	38	35	13	06	042	500 1101 54	
/	/	72791 31306	69021	30203		11508	02500	63293	20011	454380			
R	2255	250 SCT	12			295	36	34	11	06	040		
R	2357	250 SCT	12			295	36	34	08	04	040	PTCHY F	

WIND: 1000 Hrs. VV=00 PP=TT N=0 C=0 CH T₁T₂000 SP=0

TEMP: 00 BKN CH₂ 05000000 2R₂₄R₂₄R₂₄ 3P₀P₀M₀M₀ d=0 P=0 M=0 dT₀T₀T₀

U.S. GOVERNMENT PRINTING OFFICE: 1972

STATION

WSO ASTORIA, ORE

SURFACE WEATHER OBSERVATIONS

DATE NOV 9 1978

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

TIME	SKY AND CEILING (Height in Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Inches)	TEMP. (F)	DEW PT. (F)	WIND		ALTIM. ETER READING (Inches)	REMARKS AND SUPPLEMENTAL CODED DATA
		SURFACE	TOPOG.					DIRECTION (True)	SPEED (Kts.)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1057	23 SCT 40 SCT	10			251	37	35	13	04	027	40003 1800
R 0157	22 SCT 645 URM	10			251	37	34	05	07	027	RD20640
R 0258	23 SCT 645 BKN	10		hwy	251	40	36	15	07	027	RD15
R 0357	23 SCT 45 SCT	10			251	37	34	00	00	027	RE02 40004 1800 36 20008
/ /	72791 40000 66258	25103	48500	01400	63242	70420	20008	45336	1CB	PELLETS	CD
R 0457	23 SCT 45 SCT	10			254	34	32	12	05	028	
R 0556	25 SCT 45 SCT	8			256	35	33	13	03	029	PTCHY F
R 0656	55 SCT 25 SCT 45 SCT	8			257	35	32	08	04	030	PTCHY F 308 1800
R 0758	7 SCT	10			264	34	32	12	06	031	
R 0856	CLR	15			270	39	37	11	05	033	FEW ST 7 HND
R 0956	CLR	15			275	43	39	11	05	034	FEW CU / 245 1100 32
/ /	72791 1105 74020	27506	114	00	04215	63266	20007	44432	CD		
R 1051	CLR	20			275	46	36	05	09	034	FEW CU
R 1151	CLR	20			271	47	35	07	08	033	FEW CU
R 1256	20 SCT	20			268	49	33	05	07	032	807 1100
R 1356	CLR	20			264	49	31	03	11	031	FEW CU
R 1456	30 SCT	20			264	49	31	36	09	031	
R 1556	35 SCT	20			263	48	30	01	06	031	605 1500 49
/ /	72791 2010h	80000	0	26309	25600	51605	63255	20004	44932	CD	
R 1655	35 SCT	15			261	45	35	33	13	030	
R 1754	38 SCT	12			261	44	35	36	11	030	
R 1856	CLR	12			261	44	35	04	10	030	602 1400
R 1954	CLR	12			263	43	29	04	10	031	
R 2057	CLR	12			268	34	30	13	05	032	
R 2156	CLR	12			264	32	30	13	04	031	F FRMG NE / 003 1500 49
/ /	72791 11304	69020	26400	15600	51003	63256	20004	44932	CD		
R 2255	CLR	12			264	32	28	12	03	031	F NE
R 2355	CLR	12			261	30	27	07	04	030	F NE-C

NOV-1984

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

STATION

WSO ASTORIA, ORE

SURFACE WEATHER OBSERVATIONS

DATE

NOV 10 1978

TO CONVERT LST TO GMT
ADD 8 HRS. SUBTRACT

TIME (EST)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (INCHES)	TEMP. (°F)	DEW PT. (°F)	WIND			ALTIM. ETER SET- TING (INCHES)	REMARKS AND SUPPLEMENTAL CODED DATA (13)
		SURFACE	TOWER					DIR.	SPEED	CHAR.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
R 0057	CLR	10			261	33	27	13	05		030	603
R 0156	CLR	10			261	29	26	13	05		030	
R 0256	CLR	10			261	33	27	11	03		030	
R 0355	CLR	10			264	35	29	07	06		031	303 29
/	72791 00706	660	20	26402	00900	52	303	63256	44929	0		
R 0456	CLR	10			266	32	28	07	07		032	
R 0555	CLR	10			268	36	28	05	10		032	
R 0656	CLR	15			271	35	27	09	05		033	207 1500
R 0756	CLR	15			275	38	27	08	10		034	
R 0856	CLR	15			281	38	27	12	05		036	
R 0956	CLR	25			281	42	27	04	16	621	036	110 29
/	72791 00416	820	20	28106	00900	53	110	63273	44229	0		
R 1055	CLR	25			281	43	24	07	14		036	
R 1157	CLR	25			278	45	23	03	14		035	FEW CL NW-NE
R 1256	CLR	25			268	43	23	03	17		032	814 1100
R 1356	CLR	25			269	45	22	05	16	621	031	FEW CL
R 1457	CLR	25			263	44	20	04	18	623	031	FEW CL ALDS
R 1556	CLR	25			264	43	18	04	19	623	031	503 45
/	72791 00419	820	20	26406	00900	58	507	63256	44529	0		
R 1655	CLR	25			268	41	18	05	18	622	032	PK WND 0626/06
R 1755	CLR	15			270	40	18	05	18	622	033	
R 1855	CLR	15			275	40	18	05	12	616	034	310
R 1955	CLR	15			275	40	19	05	15		034	
R 2055	CLR	15			276	39	19	06	13	618	035	
R 2155	CLR	15			278	39	18	10	11		035	303 45
/	72791 01011	740	20	27804	00900	58	303	63269	44529	0		
R 2257	CLR	15			271	33	18	08	08		033	
R 2355	CLR	15			270	33	16	11	06		033	

FORM 1 11-78 VVAAW RPTT NCL-CuCh Td Td 000 6P P P P P 7RRR 8N Chh 9500000 2R2dR2dR2d 3P P M M M 6000 P M M M 6P Td Td Td

STATION

WSO ASTORIA, ORE

DATE	NOV 28 1978	TO CONVERT LST TO GMT ADD <u>8</u> hrs. SUBTRACT
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SURFACE WEATHER OBSERVATIONS

TIME	TIME	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Inches)	TEMP. (°F)	DEW PT. (°F)	WIND			ALTIM. ETER SET- TING (Inches)	REMARKS AND SUPPLEMENTAL CODED DATA
			SURFACE	TOPOG					DIRECTION	SPEED (Kts)	CHANGING		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
R 0556		M 1 OVC	3		F	207	42	40	00	00		014	31500 16 //
S 0117		M 1 OVC	1		L-F				00	00		015	
S 0142		W 1 X	1/2		F				01	05		015	(FIRI)
R 0156		W 1 X	1/2		F	210	41	40	04	06		015	LBH 600
R 0256		W 1 X	1/2		R-F	210	42	40	12	03		015	RB 5
S 0341		M 2 OVC	2		F				05	04		016	(FIRI)
R 0356		M 3 OVC	2		F	215	42	41	00	00		017	RE 25 / 10800 16 // 40 20091
/ /	72791	80000	32215		21506	862	//		05168		63	207	70020 20091 44840 0
S 0441		M 2 BKN 12 OVC	2		F				00	00		015	(FIRI)
R 0456		M 2 BKN 17 OVC	2		F	220	43	41	00	00		015	
S 0541		W 3 X	1/2		F				00	00		019	(FIRI)
R 0556		W 3 X	1/2		F	224	43	42	00	00		019	
S 0637		W 2 X	1/4		F				00	00		019	
R 0656		W 2 X	1/4		F	224	42	41	00	00		019	008
R 0756		W 2 X	1/4		F	224	43	41	00	00		019	
R 0855		W 2 X	1/4		F	231	43	43	10	03		021	USBY N 3/4
S 0926		-X M 3 OVC	1		F				00	00		022	E 4 USBY SE-SW 1/2
S 0939		-X M 8 BKN 15 OVC	1		F				05	04		022	E 4 USBY SE-SW 1/2 (FIRI)
R 0955		-X M 4 OVC	3/4		F	234	44	43	01	05		022	E 6 USBY E-S 1/4 / 310 16 // 40
/ /	72791	30105	12104		23407	362	//		06310		63	225	20091 44440 0
S 1018		-X M 7 OVC	1/2		F				00	00		024	E 3 USBY SE-S 1/4
R 1055		-X M 7 BKN 14 OVC	1/2		F	241	45	44	00	00		024	E 3 USBY SE-SW 1/2
S 1119		-X 4 S T M 9 BKN 17 OVC	1/2		F				12	03		023	F 2 USBY S-SW 1/4 COND URAL
R 1155		-X 4 S T E 9 BKN 17 OVC	1/2		F	231	45	44	06	04		021	F 2 USBY S-SW 1/4 CIG RGD
S 1221		-X 9 S T E 14 BKN 25 OVC	1/2		R-F				00	00		021	F 2 USBY S-SW 1/4 N-NE 3
S 1244		-X 8 S T E 12 BKN 30 OVC	1		R-F				00	00		018	F 1 USBY SE-SW 1/4 (FIRI)
R 1255		-X 8 S T E 12 BKN 40 OVC	1		R-F	217	46	46	18	07		017	F 1 USBY E-S 1/4 BKN V S T RB 12 / 81706 15 //
S 1310		8 S T 12 S T M 45 OVC	4		R-F				14	06		016	
R 1355		12 S T E 45 OVC	4		R-F	200	46	46	11	05		012	USBY S-SW 1/2
S 1444		4 S T 12 S T M 45 OVC	2		R-F				01	06		013	USBY N-NE 3 S-SW 1/2 (FIRI)
R 1455		4 S T 12 S T E 40 OVC	2		R-F	200	45	44	04	10		012	USBY N-NE 4
S 1530		12 S T M 38 OVC	5		R-F				09	08		010	
R 1555		M 35 OVC	5		R-F	193	45	44	10	07		010	72421 102 / 49
/ /	72791	81007	58016		19307	804	21		07724		63	185	72140 20084 0 *44940
R 1656		E 30 OVC	5		R-F	182	45	44	06	06		007	
S 1730		E 25 OVC	5		R-F				03	09		007	
R 1755		3 S T M 7 BKN 25 OVC	2		R-F	185	46	44	05	10		008	
S 1850		3 S T E 7 BKN 20 OVC	2 1/2		R-F				07	10		005	(FIRI)
R 1857		3 S T E 7 BKN 20 OVC	2 1/2		R-F	175	45	44	07	11		005	81904 172 /
R 1957		2 S T E 7 BKN 15 OVC	2 1/2		L-F	171	45	44	07	07		004	RELB 10
S 2030		2 S T E 7 BKN 12 OVC	1 1/2		R-L-F				06	06		003	
R 2057		2 S T 7 S T M 11 OVC	3		L-F	171	46	44	07	06		004	KB 10 E 50
R 2156		3 S T M 8 OVC	2		L-F	175	46	44	06	07		005	50005 17 // 49
/ /	72791	80607	32516		17508	872	//		07500		63	705	70 20026 44940 0
R 2256		2 S T M 9 OVC	2		R-L-F	180	46	45	07	05		006	RB 00
R 2356		M 1 BKN 5 OVC	1 1/2		R-L-F	183	46	45	10	04		007	

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

STATION

WSO ASTORIA, ORE

SURFACE WEATHER OBSERVATIONS

LOUIS

DEC 8 1978

TO CONVERT LST TO GMT
ADD: 3 hrs. SUBTRACT

TYPE	TIME (EST)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Hrs.)	TEMP. (°F)	DEW PT. (°F)	WIND DIRECTION (°)	SPEED (Kts.)	CHAR. FACTOR	ALTIM. ETER SET- TING (In.)	REMARKS AND SUPPLEMENTAL CODED DATA
			SURFACE	TOWER									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
R 015	1530	E 25 BKN 4500	10			232	43	42	13	04		022	2008 15//
R 015	1530	E 25 BKN 45	10			231	44	42	11	03		031	
R 025	1530	E 25 BKN 45	10			231	46	43	19	05		031	
R 025	1530	M 25 BKN 45	10			231	43	44	18	05		031	603 15// 43
/	72791	81205	6032	23109	854//	07603	63222	45143	(D)				
R 015	1530	M 14 BKN 2800	10			220	42	44	18	10		018	
R 015	1530	E 14 BKN 2800	10			215	49	44	18	10		017	
R 015	1530	E 17 BKN 2200	10			210	49	43	17	08		015	720 15//
R 015	1530	E 16 BKN 2200	10			207	49	43	19	13		014	604 SW-NW
R 0857	1530	E 14 BKN 2200	10			204	49	44	19	16		013	
S 1530	1530	2500 E 10 OVC	1/2		R-F				19	13		016	
S 1530	1530	3500 E 10 OVC	2		R-F	210	48	45	18	14		015	00002 17// 43
/	72771	81814	32012	21009	873//	07050	63245	70210	20002	44943	(D)		
S 1530	1530	7500 E 10 OVC	4		R-F				19	15		014	
R 1630	1530	6500 E 10 OVC	3		R-F	209	49	47	19	15		015	PK WND 1927/54
S 1530	1530	7500 E 10 OVC	5		R-F	200	49	47	19	18		012	PK WND 1930/40
S 1530	1530	11700 E 10 OVC	6		R-F	198	49	46	19	20		012	PK WND 1929/58 51203 17//
R 1358	1530	E 7 BKN 1700	5		R-F	193	49	47	20	18		010	PK WND 1932/03
S 1540	1530	E 7 BKN 1500	2		R-F				20	15		012	(FBI)
S 1540	1530	E 6 BKN 1500	2		R-F	177	49	47	19	17		011	PK WND 2032/15
S 1540	1530	E 7 BKN 1700	4		R-F				20	16		012	
S 1555	1530	E 7 BKN 1400	2		R-F	200	49	47	20	15		012	10211 17// 49
/	72791	82015	32016	20009	873//	68102	63191	71070	20013	44943	(D)		
R 1630	1530	M 7 BKN 1100	2		R-F	201	49	48	21	10		013	
R 1730	1530	M 7 BKN 1100	2		R-F	205	50	49	21	13		014	
S 1715	1530	M 3 BKN 700	2		R-F				22	10		015	
R 1730	1530	M 3 BKN 700	2		R-F	210	50	49	22	09		015	21010 17//
R 1930	1530	M 3 BKN 900	5		F	214	49	48	26	06		016	RF%
S 2030	1530	2500 M 3 BKN 1800	7			220	49	47	29	07		018	
S 2140	1530	4500 M 3 BKN 4500	7						29	05		018	(FBI)
R 2156	1530	4500 E 22 BKN 4500	5		F	219	48	46	27	05		018	00410 15// 50
/	72791	82105	58106	21909	852//	68025	63210	71030	20023	45043	(D)		
R 2156	1530	4500 M 22 BKN 4500	5		R-F	222	48	45	29	03		019	RAM
R 2156	1530	4500 E 22 BKN 4500	5		R-F	222	47	45	31	05		019	

WSO ASTORIA, ORE

DATE

DEC 4 1978

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

SURFACE WEATHER OBSERVATIONS

TIME (12)	SKY AND CEILING (Hundreds of Feet) (13)	VISIBILITY (Miles) (14)		WEATHER AND OBSTRUCTIONS TO VISION (15)	SEA LEVEL PRESS. (16)	TEMP. (17)	DEW PT. (18)	WIND (19)			ALTIM. ETER SET- TING (Inch.) (12)	REMARKS AND SUPPLEMENTAL CODED DATA (13)
		SURFACE	TOWER					DIR.	SPEED	CHAR.		
0056	45/225/FE350VC	5		R-F	210	45	43	18	04		015	80808 1711
0157	45/225/FE310VC	5		R-F	204	45	43	00	00		013	
0243	75/115/0KN250VC	4		R-F				00	00		014	(F101)
0359	75/114/0KN270VC	4		R-F	210	44	42	00	00		015	
0456	75/1145/1M280VC	4		R-F	197	44	42	14	04		010	81712 1711 44 20035
0555	75/1145/1M230VC	5		R-F	190	43	41	19	03		009	195 71260 20035 45044 4602980
0633	75/1145/1M230VC	5		R-F	190	42	40	00	00		009	
0643	75/1145/1M280VC	5		R-F				33	08		008	(F101)
0656	75/1145/1M280VC	5		R-F	187	42	39	33	08		008	80711 1711
0712	75/1145/1M280VC	5		R-F				33	04		009	(F101)
0755	75/1145/1M280VC	5		R-F	188	41	39	32	05		009	
0856	75/1145/1M280VC	5		R-F	188	42	39	34	04		009	
0955	75/1145/1M280VC	7		R-				36	04		009	
1055	75/1145/1M280VC	8		R-	193	42	39	36	04		010	30720 172/ 41
1157	75/1145/1M280VC	63	616	19306	3722			04307	63185		012	72070 20053 44841 0
1258	75/1145/1M280VC	10		R-	200	42	39	25	05		012	
1357	75/1145/1M280VC	10		R-	205	44	40	31	12		014	
1457	75/1145/1M280VC	15			209	45	40	30	13	022	015	RE30 21504 1830
1557	75/1145/1M280VC	15						30	16	024	016	
1657	75/1145/1M280VC	20			219	46	37	30	15	022	017	PR WND 3026/40
1757	75/1145/1M280VC	20			224	47	37	30	18	026	019	PR WND 3027/20
1857	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
1957	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
2057	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
2157	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
2257	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
2357	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
2457	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
2557	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
2657	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
2757	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
2857	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
2957	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
3057	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
3157	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
3257	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
3357	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
3457	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
3557	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
3657	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
3757	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
3857	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
3957	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
4057	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
4157	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
4257	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
4357	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
4457	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
4557	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
4657	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
4757	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
4857	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
4957	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
5057	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
5157	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
5257	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
5357	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
5457	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
5557	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
5657	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
5757	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
5857	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
5957	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
6057	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
6157	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
6257	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
6357	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
6457	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
6557	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
6657	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
6757	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
6857	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
6957	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
7057	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
7157	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
7257	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
7357	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
7457	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
7557	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
7657	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
7757	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
7857	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
7957	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
8057	75/1145/1M280VC	20			231	45	33	31	19	027	021	PR WND 3128/45 22204 1200 47
8157												

STATION

SURFACE WEATHER OBSERVATIONS

WSO ASTORIA, ORE

DATE DEC 15 1978

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

TIME (LST)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Inches)	TEMP. (°F)	DEW PT. (°F)	WIND			ALTIM. ETER SET- TING (Inches)	REMARKS AND SUPPLEMENTAL CODED DATA (13)
		RAINFALL (Inches)	TO WIND					DIRECTION (True)	SPEED (Knots)	CHARACTER		
0050	20 SCT E 45 BKN	10			295	40	35	29	09		040	312 1800
0156	20 SCT 45 SCT	10			298	37	33	22	04		041	
0256	20 SCT 45 SCT	10			302	34	31	13	04		042	
0356	20 SCT 45 SCT	10			302	32	30	12	04		042	107 1800 32 20024
0456	72791 21204 66021 30200				285	30	51	107	63293		043	20024 45132 0
0556	20 SCT	10			305	32	29	13	06		043	
0656	20 SCT	10			305	32	30	12	06		043	
0756	20 SCT E 35 BKN	10			312	35	31	11	04		045	110 1800
0856	20 SCT E 30 BKN	10			315	34	31	11	06		046	RWN N-NE
0956	30 SCT	10			319	34	32	12	04		047	
1056	30 SCT	10			322	35	33	12	04		048	TCU MNT SW-NW/210 1100 30'
1156	72711 21204 66031 32202				215	50	01	210	63313		049	20006 44230 0
1256	25 SCT 30 SCT	10			322	41	37	06	05		049	
1356	25 SCT 35 SCT	12			315	43	39	36	05		046	
1456	25 SCT 135 BKN	12			305	46	38	16	05		043	817 1100
1556	25 SCT 35 SCT	12			300	47	37	19	09		042	
1656	25 SCT 38 SCT	10			295	45	35	17	07		040	
1756	25 SCT 38 SCT	10			288	44	34	17	07		038	7170 1100 47 * 2000515
1856	72791 21707 66251 28807				215	50	02	217	63279		037	70010 20006 44730 0
1956	20 SCT E 45 BKN	10			285	44	34	17	07		037	RWN NW RLDIPS S-SW
2056	20 SCT E 45 BKN	10			281	41	33	17	06		036	
2156	25 SCT E 45 BKN	10			275	41	33	15	07		034	814 1800
2256	18 SCT E 40 OVC	10			264	38	34	08	04		031	RB09E48 SCT V BKN
2356	18 SCT E 40 BKN 100 OVC	10			258	35	33	13	04		029	
2456	40 SCT 100 SCT E 220 BKN	10			244	32	30	12	05		025	83001 1518 47
2556	72791 71205 66028 24400				256	18	51	830	63235		023	70130 20001 44730 0
2656	40 SCT 100 SCT E 220 BKN	10			234	32	30	00	00		022	
2756	100 SCT E 220 OVC	10			224	32	31	11	04		019	

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

STATION

WSO ASTORIA, ORE

DATE _____

DEC 17 1978

TO CONVERT LST TO GMT

ADD 3 hrs. SUBTRACT

SURFACE WEATHER OBSERVATIONS

TIME (1)	TIME (2)	SKY AND CEILING (Hundred Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Inches)	TEMP. (F)	DEW PT. (F)	WIND			ALTIMETER SETTING (Inches)	REMARKS AND SUPPLEMENTAL CODED DATA (13)
			SURFACE (4)	PIRCE (5)					DIRECTION (100-360)	SPEED (Knots)	CHARACTER (111)		
R	0156	E20 BKN 40 OVC	5		R-	782	45	37	17	13	02	748	PK WND 1730/09/10501 15//
R	0156	E20 BKN 40 OVC	4		RW	787	41	36	19	23	04	749	RE01872 PK WND 1943/51
K	0156	E20 BKN 40 OVC	5		RW-	794	41	38	20	22	04	751	PK WND 1939/07
R	0356	E 20 BKN 40 BKN	10			800	44	38	20	15	02	753	RE06 PK WND 1931/11/31915 1940.36 200
/	/	72791 62015 6	25	08	00007	68500	03	319	69992	7	1530	20025	44436 0
R	0456	M18 BKN 40 OVC	10		RW-	809	43	37	21	18	02	756	PK WND 2027/41 * RE02
R	0556	M16 OVC	5		RW-	816	40	36	23	12		758	
R	0656	M14 OVC	7		RW	821	40	36	25	08		760	2429 12//
R	0756	10 SCT M14 OVC	5		RW F	833	38	34	16	04		763	RW RE01872
R	0855	M16 BKN 25 OVC	5		RW-F	841	37	35	08	04		765	
R	0955	M14 OVC	5		RW-F	848	38	36	10	03		767	22453 15// 36
-	-	72791 81003	58808		04803	85417	02	224	63	039	75360	20081	44536 0
R	1055	E14 BKN 50 OVC	10			848	39	37	09	07		767	RE48 FEW STERA 11HND NW-SE BKN OVC
S	1114	18 SCT E 50 OVC	10						09	08		766	FEW STERA 9HND NW-SE BKN OVC SW
R	1155	25 SCT E 50 OVC	10			846	41	38	07	06		767	FEW STERA 9HND NW-SE BKN OVC S-W
R	1355	38 SCT E 50 OVC	15			848	42	38	04	06		767	FEW STERA 9HND NW-SE/50004 18//
RS	1355	9 SCT M16 BKN 40 OVC	15			851	40	37	03	06		768	RWWS DSNT SW-W
S	1408	E9 BKN 14 OVC	5		TPW-				27	15	018	770	TPB07 USBY LWR SW-W
S	1422	E9 BKN 14 OVC	1		SW-F				29	10		770	TPB20 CIG RGD
S	1440	M10 BKN 18 OVC	5		RW-F				33	04		770	CIG RGD (F181)
RS	1455	M18 BKN 18 OVC	7		RW-	858	35	32	14	03		770	CIG RGD TPB07E2038PE28RB26
S	1529	M10 BKN 22 OVC	7		RW-				13	09		770	
R	1555	M11 BKN 22 OVC	7		RW-	858	35	33	13	12		770	11020 17// 44
-	-	72791 81312 61808	05802		874//	01110	63	049	72029	20092	44435	SNOW AND ICE PELLETS 0	
R	1158	E10 BKN 25 OVC	7		RW-	868	36	33	30	03		773	
R	1257	10 SCT E 50 BKN 50 OVC	10			870	35	33	11	06		774	RE47
R	1858	E25 BKN 55 OVC	10			873	35	33	07	06		775	RB07E40 11516 15//
S	1920	25 SCT E 50 BKN 80 OVC	10						06	04		775	
R	1956	50 SCT E 100 BKN 250 OVC	10			877	34	32	00	00		776	
R	2058	50 SCT E 100 BKN 250 BKN	10			882	32	30	12	04		777	
R	2157	100 SCT 230-BKN	10			887	32	30	00	00		779	21416 1038 45
/	/	72791 60000	66018		87700	20938	51	214	63078	71640	20104	44531 0	
S	2245	-X	1/4		F				00	00		780	F 4 (F181)
RS	2256	-X	1/2		F	895	29	28	00	00		781	F 3
S	2310	-X	1/4		F				00	00		781	F 5
S	2335	100 SCT	3		F				00	00		782	
S	2347	-X 100 SCT	1		F				00	00		782	F 2 (F181)
R	2357	-X 100 SCT	1		F	100	30	28	00	00		783	F 2

STATION

NEW ASTORIA, ORE

DATE _____

DEC 29 1978

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

SURFACE WEATHER OBSERVATIONS

TIME (1)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Inches)	TEMP. (F)	DEW PT. (F)	WIND		ALTIM. ETER. SET. TING (Inches)	REMARKS AND SUPPLEMENTAL CODED DATA
		SURFACE (10)	TO WEA. (11)					DIRECT ION (Kts.)	SPEED (Kts.)		
0056	45 SCT	10			248	25	10	06	08	026	107 1500
0155	M45 BKN	10			251	25	10	12	05	027	
0255	M45 BKN	10			256	25	9	09	07	029	
0355	40 SCT	10			258	23	9	06	06	029	110 1500 22
/	72791 40606	66011	25855	45600	63110	63249	43522	0			
0456	40 SCT	10			258	24	10	06	10	029	
0555	CLR	10			261	24	11	06	12	030	
0657	CLR	15			266	22	10	07	10	032	308
0757	40 SCT	20			270	21	10	10	07	033	
0856	40 SCT	20			278	24	10	08	09	035	
0956	CLR	20			283	25	10	05	10	037	117 1500 20
/	72781 10510	80020	28354	15600	62117	63274	42620	0			
R 1056	CLR	20			290	26	11	08	06	039	
R 1156	CLR	20			288	27	11	04	06	038	
R 1256	CLR	20			285	28	11	08	08	037	002 1500
R 1356	CLR	20			283	29	10	05	09	037	
R 1456	CLR	20			283	29	8	04	11	037	
R 1556	CLR	20			283	28	8	05	08	037	602 1500 30
/	72791 10508	80020	28352	15600	63602	63274	43020	0			
R 1656	CLR	15			287	27	08	06	08	038	
R 1755	CLR	15			288	25	08	09	06	038	
R 1857	CLR	15			292	25	10	07	08	039	208
R 1955	CLR	15			295	23	10	08	06	040	
R 2055	CLR	15			298	23	11	07	08	041	
R 2156	F100 OVC	15			298	22	11	11	07	041	107 107/ 30
/	72791 81107	74030	29856	80971	62107	63290	43020	0			
R 2255	F100 BKN	15			298	21	11	12	04	041	
R 2357	E55 BKN/60 OVC	15			302	23	11	00	00	042	

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE												STATION WISO ASTORIA, ORE	
SURFACE WEATHER OBSERVATIONS												DATE DEC 30 1978	
												TO CONVERT LST TO GMT ADD 8 hrs. SUBTRACT	
TYPE	TIME (LST)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Inches)	TEMP. (°F)	DEW PT. (°F)	WIND			ALTIM. COR. (Inches)	REMARKS AND SUPPLEMENTAL CODED DATA
			SURFACE	LOWER					DIRECTION (° True)	SPEED (Kts.)	CHARACTER		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
R	0057	E 55 OVC	10			302	23	10	08	06		042	103 15 //
R	0156	E 55 OVC	10			303	23	8	08	04		043	
R	0257	E 55 BKN 100 OVC	10			302	24	9	07	06		042	
R	0356	55 SCT 100 SCT	10			300	22	8	08	06		042	802 1570 21
/	/	72791 40806	6012		30056	25770	63802	63291				43021	0
R	0456	405CT E 55 OVC	10			298	24	10	08	07		041	
R	0556	405CT E 65 BKN	10			295	22	10	07	08		040	
R	0658	M 38 BKN 65 OVC	10			298	23	11	07	08		041	502 15 //
R	0755	E 35 OVC	20			298	24	10	07	07		041	
S	0840	M 25 OVC	20						07	09		041	(FIRI)
R	0852	M 25 OVC	20			300	24	10	07	09		042	
R	0956	E 25 OVC	20			302	24	11	08	10		042	SUN DNT E / 103 15 // 21
/	/	72791 80810	80152		30254	855	//	62103		63293		42521	0
R	1056	E 25 OVC	15			302	25	11	07	11		042	SUN DNT E
R	1156	M 28 OVC	10		S-	298	25	12	07	14		041	5046
R	1256	M 28 OVC	7		S-	292	25	15	07	12		039	81000 15 //
R	1356	M 28 OVC	4		S-	285	25	18	07	13		037	
S	1418	W 8 X	2		S-				06	11		036	
R	1456	W 8 X	1		S-	28	24	20	07	11		036	
S	1515	-X M 22 OVC	2		S-				07	12		036	52
R	1556	-X E 22 OVC	2		S-	281	24	19	09	11		036	59 / 81003 15 // 26
/	/	72791 80911	32717		28154	855	//	57810		63273		70359	20003 47421 0
R	1657	W 10 X	1		S-	275	23	19	09	08		034	
R	1758	-X M 22 OVC	2		S-	271	23	20	09	09		033	59
R	1859	-X M 22 OVC	2		S-	270	23	19	09	11		033	7 / 61209 15 // 598
R	1958	-X M 22 OVC	2		S-	278	24	19	06	12		035	88
S	2024	M 30 OVC	7						06	10		035	64 22
R	2057	M 32 OVC	7			280	24	19	06	15		036	55 22
R	2159	M 32 OVC	7			281	25	18	06	15		036	11209 15 // 26
/	/	72791 80915	61027		28154	855	//	58112		63273		70922	20012 42421 0
R	2256	35 SCT	7			287	24	18	06	13		038	
R	2357	35 SCT	7			288	24	16	06	16		038	

FILED: 111 N44H VVW# PRPTT M4C NC4C4 T3T4000 6P.P.P.P. 7RRR.1 0N.C4.4 95-10000 2R24R24R24 3P.S.M.M. 444P.M.M. 4T T.P.T.

MP1-10A
15-74

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

STATION

WSO ASTORIA, ORE

DATE

JAN 16 1979

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

SURFACE WEATHER OBSERVATIONS

TYPE	TIME (LST)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (In.)	TEMP. (°F)	DEW PT. (°F)	WIND			ALTIM. ETER. SET- TING (In.)	REMARKS AND SUPPLEMENTAL CODED DATA
			SURFACE	TO WTR					DIREC- TION (°)	SPEED (Kts.)	WAVE HGT. (Kts.)		
SA	0057	E 25 OVC	10			176	36	33	03	06		005	214 15//
SA	0158	18 SCT E 23 OVC	10		RW-	185	37	33	00	00		008	RB40
SA	0258	12 SCT E 20 BKN 30 OVC	10			190	36	33	00	00		009	RE 30
SA	0356	12 SCT E 20 OVC	10			190	37	34	13	03		009	11400 18// 34
/	/	72791 81303 66028	19003	884//		01114	63181	70020					44434 0
SA	0456	12 SCT E 20 OVC	10			193	36	34	00	00		010	
SA	0556	14 SCT E 20 OVC	8			200	37	34	02	04		012	
SA	0657	14 SCT E 20 OVC	8			205	37	34	00	00		014	215 18//
SA	0758	E 18 BKN 25 OVC	5		F	207	38	35	08	03		014	
SA	0855	M 18 BKN 25 OVC	5		F	210	37	35	05	03		015	
SA	0954	M 18 BKN 25 OVC	5		F	217	39	36	03	05		017	212 15// 33
/	/	72791 80305	58102	21704		854//	02212	63208					43933 0
SA	1055	M 18 BKN 25 OVC	6		F	220	40	37	06	04		018	BINWLC DSNT S
SA	1155	M 18 BKN 25 OVC	6		F	217	41	37	05	03		017	
SA	1255	M 18 OVC	6		F	217	41	36	06	03		017	000 15//
SA	1355	11 SCT M 25 BKN 32 OVC	7			215	42	37	07	07		017	
SP	1429	22 SCT M 30 BKN	7						09	05		015	
SA	1455	M 30 OVC	10			214	44	38	09	04		016	BINWLC
SA	1551	M 30 BKN 90 BKN	10			210	42	37	08	06		015	707 1570 44
/	/	72791 50806	66012	21006		55570	03707	63202					44434 0
SA	1655	325 J 1105 J 250-	10			210	39	35	00	00		015	
/	/	OVC											
SA	1757	325 J 1105 J 250 OVC	10			210	37	34	00	00		015	
SA	1856	325 J 1105 J 250 BKN	10			207	37	34	00	00		014	803 1578
SA	1958	325 J 1105 J 250 SCT	10			207	36	33	11	05		014	
SA	2057	325 J 1105 J 250 SCT	10			204	35	32	00	00		013	
SA	2156	325 J 1205 J	12			197	33	30	00	00		011	810 1530 44
/	/	72791 20000	69021	19701		15530	51810	63188					44433 0
SA	2257	140 J	12			190	34	31	09	06		009	
SA	2358	140 J	12			183	34	31	07	06		007	

FM10: 11 1144H VV=PPDTT VVCLCCH T₀T₁₀₀₀ 6P₀P₀P₀ TRRR, 0N, CH₀ 950msec 2R₂₄R₂₄R₂₄ 3P₀P₀P₀ 4L₀P₀M₀ 4T₀T₀T₀

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE										STATION WSO ASTORIA, ORE.		
SURFACE WEATHER OBSERVATIONS										DATE JAN 18 1979		
										TO CONVERT LST TO GMT ADD <u>8</u> hrs. SUBTRACT		
TIME (1)	TYPE (2)	SKY AND CEILING (3)	VISIBILITY (4)		WEATHER AND OBSTRUCTIONS TO VISION (5)	SEA LEVEL PRESS. (6)	TEMP. (7)	DEW PT. (8)	WIND (9)		ALTIM. ETER SET- TING (12)	REMARKS AND SUPPLEMENTAL CODED DATA (13)
			SURFACE (10)	TOWER (11)					DIRECT SPEED (14)	CHARTER FACTOR (15)		
0058	SA	M 11 OVC	3		R-F	222	37	35	06	06	019	80508 102/
0131	SP	1 SCT M 9 OVC	3		R-F				05	05	019	
0157	RS	2 SCT M 8 OVC	4		R-F	224	37	35	12	03	019	
0245	SP	2 SCT M 7 OVC	4		L-F				06	03	019	(FIBI)
0256	SA	2 SCT M 7 OVC	4		R-F	224	37	35	01	03	019	RELB40LERB52
0356	RS	2 SCT M 6 OVC	4		R-F	220	37	35	05	04	018	80210 172/ 37 20010
/	/	72791 80504	566	6	22003	2712	/	02802	63212	71060	20010	444370
0456	RS	2 SCT M 4 OVC	3		R-F	220	37	35	09	05	018	
0518	SP	M 2 BKN 4 OVC	2		R-F				05	07	018	
0558	SA	M 2 BKN 4 OVC	2		R-F	224	38	35	09	03	019	
0644	SP	M 2 BKN 4 OVC	1 1/2		R-F				08	08	019	(FIBI)
0657	RS	2 SCT M 4 OVC	1 1/2		R-F	227	38	36	07	09	020	30704 172/
0757	SA	2 SCT E 4 OVC	1 1/2		R-F	234	37	35	05	04	022	
0855	RS	M 2 OVC	1		L-F	241	38	36	05	03	024	RELB15
0929	SP	M 2 OVC	1 1/2		L-F	244			09	04	025	
0954	RS	M 2 OVC	2		L-F	248	38	37	07	04	026	22005 17// 32
/	/	72791 80704	325	16	24803	8711	//	03220	63239	70570	20015	438320
1024	SP	M 2 OVC	3		F				03	03	027	THN SPTS 10VC
1056	SA	M 2 OVC	3		F	251	40	38	01	03	027	LEIS TUN SPTS 10VC
1128	SP	M 2 OVC	2		L-F				14	03	026	(FIBI)
1135	SP	M 2 OVC	1 1/2		L-F				07	03	026	
1144	SP	M 2 OVC	1		L-F				04	05	026	(FIBI)
1155	SA	M 2 OVC	1		L-F	251	40	39	36	04	027	LB25
1217	SP	E 2 OVC	3/4		L-F				03	05	026	
1256	SA	E 2 OVC	3/4		L-F	248	41	39	07	04	026	00000 16//
1357	SA	F 2 OVC	3/4		L-F	244	41	40	07	04	025	
1455	SA	250 E 3 OVC	3/4		L-F	244	42	40	04	03	025	
1551	SA	E 3 OVC	3/4		L-F	244	41	40	07	05	025	60300 16// 42
/	/	72791 80705	125	15	24405	8621	//	04603	63235	70050	20015	442370
1656	SA	E 3 OVC	3/4		L-F	242	41	40	09	03	025	
1731	SP	E 3 BKN 7 OVC	1		R-F				07	03	024	
1756	SA	E 3 BKN 7 OVC	1		R-F	241	41	40	12	03	024	LE16R06
1840	SP	E 3 BKN 7 OVC	2		R-F				10	03	024	(FIBI)
1856	SA	E 2 BKN 7 OVC	2		R-F	241	41	39	07	05	024	60314 162/
1956	SA	E 2 BKN 6 OVC	2		RF	241	41	40	00	00	024	
2056	SA	E 3 BKN 6 OVC	2		RF	241	41	40	05	03	024	
2156	SA	M 2 OVC	2		R-F	237	42	40	05	07	023	80351 16// 42
/	/	72791 80507	326	18	23706	8211	//	04803	63229	75770	20066	442370
2238	SP	M 2 OVC	1		R-F				03	03	023	
2256	RS	M 2 OVC	2		L-F	239	46	43	18	03	024	2535633
2326	SA	M 4 OVC	3		L-F				20	14	024	WSHFT 01 FROPA
2356	SA	M 4 OVC	3		L-F	239	49	48	20	12	024	WSHFT 01 FROPA

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE										STATION WSO ASTORIA, ORE		
SURFACE WEATHER OBSERVATIONS										DATE JAN 21 1973		
										TO CONVERT LST TO GMT ADD 8 hrs. SUBTRACT		
TYPE	TIME (LST)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Inches)	TEMP (°F)	DEW PT. (°F)	WIND		ALTIMETER SETTING (Inches)	REMARKS AND SUPPLEMENTAL CODED DATA
			SURFACE	TOOR					DIRECTION (°T)	SPEED (Kts)		
RS	0055	55ct M7 OVC	3		L-F	190	48	46	20	12	007	RFLBOS / 81202 17//
SA	0155	15ct 35ct E7 OVC	3		R-F	187	43	41	30	08	003	35ct V BN VSEY UNSTDY LEBB WSHFT GEDL
SP	0205	M1 Bw 30 OVC	2		R-F				29	07	008	
SP	0230	15ct E7 Bw 13 OVC	3		R-F				30	12	009	R- ONLY R
SA	0255	15ct E7 Bw 13 OVC	3		R-F	193	42	40	30	10	010	R- ONLY R
SA	0315	E7 Bw 25 OVC	3		R-F	197	41	39	31	07	011	R- ONLY R / 30717 16// 41 20026
		72791 83107 48616	16		19705	853			04	307	63128	71770 20026 46341 (F)
EP	0415	75ct M19 OVC	5		R-F				10	02	012	
EA	0455	75ct M19 OVC	6		R-F	200	41	40	12	05	012	
SA	0516	95ct M25 OVC	10			197	42	39	18	03	010	REIS
SA	0615	95ct 165ct M23 Bw 65 OVC	12			204	40	39	24	04	013	30711 157/
SA	0715	155ct M22 Bw 65 Bw	10			204	39	38	00	00	013	RECHY GF
SA	0855	145ct M23 OVC	15			210	40	38	00	00	015	01MVC
SP	0925	145ct 235ct	15						30	03	016	
SA	0956	145ct 235ct	15			214	44	39	31	04	016	31011 1500 38
		72791 33104 74016	214	07	35400	04310	63205	71150	20036	449380		
SA	1057	145ct 235ct	15			217	43	38	30	06	017	
SA	1158	145ct 225ct	15			217	44	38	30	09	017	
SA	1256	165ct 225ct	15			217	45	36	31	12	017	103 1500
SA	1357	165ct 225ct	15			217	45	36	29	13	017	
SA	1458	165ct 235ct 250ct	15			219	45	36	31	08	018	
SA	1555	165ct 235ct 250ct	15			220	43	35	30	08	018	303 1801 46
		72791 33005 74020	220	06	28401	022303	63212	20032	446380			
SA	1656	185ct 250-Set	15			220	41	34	32	08	018	
SA	1757	185ct 250-Set	15			219	38	33	00	00	018	
SA	1856	250-Set	15			224	37	32	06	04	019	303 1001
SA	1955	CLB	15			226	33	30	10	04	020	
SA	2057	CLB	10			227	33	31	60	00	020	
SA	2159	CLB	10			232	31	29	10	03	022	308 49
		72791 01003 66020	232	51	00700	52008	63224	20028	449310			
SA	2255	CLB	7			234	30	28	09	05	022	
SA	2357	CLB	7			231	31	29	00	00	021	

Form 10-10A (Rev. 7-71) Hdbk VV-10B PPTT H₂C₂H₂C₂H₂ T₀T₀₀₀ 6P₀P₀P₀P₀ 7RRR₀ 8N₀C₀H₀ 9SpSpsps 2R₂R₂R₂R₂ 3P₀P₀M₀M₀ 4L₀L₀P₀M₀M₀ 5T₀T₀T₀T₀

SURFACE WEATHER OBSERVATIONS

WSO ASTORIA, ORE

DATE _____

JAN 24 1979

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

TYPE	TIME (12)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Inches)	TEMP. (°F)	DEW PT. (°F)	WIND		ALTIM. ETER SET. TING (Inches)	REMARKS AND SUPPLEMENTAL CODED DATA (13)
			(14)	(15)					(16)	(17)		
SP0000	-X E8B W 1600	1/8			F				11	04	991	E5
SP0000	-X	0			F		104	33	00	00	991	F7/ B14
SP0031	-X E17 P 2300	1/4			F				00	00	991	E5
SP0031	-X E17 P 2300	1/4			F		106	33	11	04	992	FA VSBY 5 1/2 N 5/4
SP0031	-X E17 P 2300	1 1/2			F				13	05	999	F5 VSBY 51 N2
SP0031	-X M2600	2 1/2			F		102	33	12	04	999	FA VSBY 5 1/2 N4
SP0037	M2600	3			F				10	03	997	
SP0037	E2600 J 3500	3			F		112	34	00	00	992	B17 15// 32 2000B
/	72791 80000 48104	11201	855	/	01817	63103	2000B	44332				
SP0037	M2600	4			F		109	33	00	00	992	F BWR 0800 N *DWS
SP0037	-X1450 H3500	4			F		102	35	05	05	993	E1 LB15 INTMT L-
SP0037	-X173800	4			F		102	35	08	03	993	F1 DWS F BWR 0800 N INTMT
/												L- / 61003 15//
SP0037	-X173800 J 1200	2 1/2			F				00	00	993	E1 VSBY 5 1/2 N4
SP0037	L6800 J 2600	2 1/2			F		100	34	09	03	992	SM1 B100X E VSBY 5 1/2 DWS
/												F BWR 0800 NW LEOS
SP0037	M2600 3500	2 1/2			F		102	35	07	03	993	
/												12000
SP0037	2500 E3500	2 1/2			F				08	07	993	
SP0037	2500 E3500	3			F		102	36	08	07	993	40000 1578 32
/	72791 80007 48102	10202	35678	01400	63093	70030	2000B	43732				
SP0037	3500 12000	3			F		102	37	05	05	993	
SP0037	3500 12000	3			F		099	40	07	09	992	
SP0037	3500 12000	10					095	40	05	11	991	807 1878
SP0037	3500 12000	15					097	40	04	12	992	
SP0037	3500 12000	20					102	41	05	11	993	
SP0037	3500 12000	20					109	40	03	08	995	CB DSNT SE / 214 1902 41
/	72791 10308	80011	10904	19402	01214	63100	2000B	44132				
SP0037	E2000	15					112	38	04	08	996	
SP0037	M1600	10					115	37	06	05	997	
SP0037	1600 2500	10							35	03	998	
SP0037	1600 2500	10					122	34	24	03	999	214 1501
SP0037	1600 2500	10					126	31	00	00	990	
SP0037	1600 2500	10					131	30	15	03	992	
SP0037	1600 2500	10					138	30	12	03	994	215 1501 41
/	72791 21203	66011	13851	15001	53215	63129	44128					
SP0037	1600 2500	10					141	29	11	04	995	PTCY 6E
SP0037	1600 2500	10					144	29	11	04	995	PTCY 6E

U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE													STATION WSO ASTORIA, ORE	
SURFACE WEATHER OBSERVATIONS													DATE JAN 28 1979	
													TO CONVERT LST TO GMT ADD <u>8</u> hrs. SUBTRACT	
TYPE (1)	TIME (2)	SKY AND CEILING (3)	VISIBILITY (4)		WEATHER AND OBSTRUCTIONS TO VISION (5)	SEA LEVEL PRESS. (6)	TEMP (7)	DEW PT. (8)	WIND (9)			ALTIM. ETER SET- TING (12)	REMARKS AND SUPPLEMENTAL CODED DATA (13)	
			SURFACE (10)	TOWER (11)					DIRECT SPEED (101)	CHARTER SPEED (102)	CHARACTER (103)			
SA	0056	-X	1/4		F	254	27	24	00	00		028	F9 / 108	
SA	0155	-X	1/4		F	258	27	24	00	00		029	F7	
SP	0220	-X	2		F				00	00		029	F4	
SP	0235	-X	1/2		F				00	00		029	F9	
PS	0257	-X	2 1/2		F	258	25	22	00	00		029	F3	
PS	0356	-X	5		F	261	25	23	00	00		030	F1 / 307 24 20031	
/	/	72791	00000	58104	26154	00900	55307	63252	20031	478240				
SA	0458	-X	5		F	261	24	21	00	00		030	F1	
SA	0555	-X	4		F	261	25	22	00	00		030	F1	
SA	0656	CLR	15			263	25	23	00	00		031	PRCHY F / 302	
SP	0735	-X	3/4		F				00	00		031	F4	
SP	0745	W O X	1/8		F				00	00		032	(FIRI)	
SA	0757	W O X	1/8		F	268	24	20	00	00		032		
SP	0818	-X EV OK	1/2		F				00	00		032	F6	
SP	0934	-X 4 SCT	1/2		F				00	00		032	F2 VSBY HIR 5	
PS	0956	CLR	1		F	268	27	25	00	00		032	VSBY HIR 5	
SP	0940	CLR	3		F				00	00		032	VSBY HIR 2	
SA	0956	CLR	3		F	271	31	29	00	00		033	VSBY HIR 5-9W / 208 ES	
/	/	72791	00000	48104	27151	00900	57208	63262	20005	431230				
SA	1056	CLR	10			268	32	30	00	00		032	PRCHY F NW-N	
SA	1156	CLR	15			261	37	31	07	03		030	FEW CV	
SA	1256	CLR	15			249	39	30	04	05		027	FEW CV / 822 1100 -1	
SA	1356	CLR	15			241	39	31	01	06		024	FEW CV	
SA	1456	CLR	15			237	40	30	03	07		023	FEW CV	
SA	1556	CLR	15			237	38	30	04	07		023	FEW CV / 6142 1100 40	
/	/	72791	10407	74020	22703	1500	51412	63225	440230					
SA	1655	250-SCT	15			234	36	29	08	06		023	FEW CV	
SA	1755	250-SCT	15			231	34	28	08	05		021		
SA	1855	250-Brd	12			231	30	27	07	06		021	607 1006	
SA	1955	250-Brd	10			227	31	27	09	05		020		
SA	2055	250-SCT	10			224	38	26	09	04		019	F OVR GIVER N	
SA	2155	250-SCT	10			224	27	25	07	05		019	607 1008 40	
/	/	72791	20705	66021	22453	00900	54107	63215	440230					
SA	2255	CLR	10			220	28	25	08	04		018	PRCHY F	
SA	2355	CLR	10			217	28	25	06	05		017		

STATION

SURFACE WEATHER OBSERVATIONS

WSO ASTORIA, ORE

DATE FEB 07 1979

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

TIME	TIME	SKY AND CEILING (Height of Clouds)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Inches)	TEMP (°F)	DEW PT. (°F)	DIREC- TION (°)	SPEED (Kts.)	CHAR- ACTER	ALTIM- ETER READING (Inches)	REMARKS AND SUPPLEMENTAL CODED DATA
			SMALL	TOTAL									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
SA	0056	4KT 10 SCT E25 OVC	6		R-	153	45	42	25	09		998	2200 172/
SA	0156	4KT 10 SCT E25 OVC	7		R-	160	44	41	25	07		000	
SA	0256	14KT E25 OVC	10			166	43	39	24	06		002	INTANT R-
SA	0327	25 SCT E45 OVC	10						23	06		003	BIMMVL
SA	0456	25 SCT E45 OVC	10			173	42	39	27	10		004	BIMMVL / 22013 1500 41 20169 *RE
/	/	72791 72710 66216	17306	785	//	04220	63164	71380	20169	44941	0		
SA	0456	25 SCT E45 OVC	10			176	40	37	26	05		005	
SA	0556	25 SCT E45 BKN	10			180	40	37	22	03		006	
SA	0656	E45 BKN	15			190	37	36	00	00		009	217 1500
SA	0730	E20 BKN 45 OVC	10		RW-				14	03		010	
SA	0756	E15 BKN 45 OVC	10		RW-	204	38	36	00	00		013	RB24 BIMMVL
SA	0819	1556T M38 BKN	12						14	05		013	
SA	0855	M45 BKN 120914 262800	12			214	39	37	16	07		016	RE15
SA	0955	4556T 12056T E25 OVC	12			220	41	39	12	07		018	23003 1578 34
/	/	72791 81207	69028	22005		25678	04230	63212	70320	20134	448340		
SA	1058	45 56T 12056T E25 OVC	12			227	45	40	13	03		020	
SA	1158	1756T M45 BKN 270000	12			227	47	38	22	07		020	
SA	1255	1756T M38 BKN 270000	12			224	47	39	22	07		019	003 1808
SA	1355	1756T 215 M40 BKN	12			224	47	39	22	09		019	
/	/	250000											
SA	1455	2056T 3056T E65 OVC	12			227	47	39	22	08		020	
L	1523	20 56T 30 56T E65 OVC	12			46	39	22	07			020	
SA	1550	14 36T 30 56T E65 OVC	12			231	46	39	22	07		021	307 1571 48
/	/	72791 82207	69022	23108		35471	04307	63222	20093	448340			
SA	1655	1256T E40 OVC	12			232	45	38	19	06		022	
SA	1758	12 56T E35 OVC	10			229	45	39	12	04		021	
SA	1857	1556T E40 OVC	10			227	44	38	14	04		020	603 1511
SA	1956	18 56T E40 OVC	7		R-	226	44	38	13	03		020	RB15
SA	2055	1556T E32 OVC	7		R-	222	42	38	00	00		019	
RS	2156	E35 OVC	8			215	42	39	07	05		017	RE40 81201 1511 48
/	/	72791 80705	63216	21506	85511	04812	63207	70130	20017	448340			
SA	2255	M19 OVC	8			209	42	39	10	04		015	
SA	2356	M12 OVC	3		R-F	204	42	39	08	05		013	RB03

051-104
15-79

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE

STATION

WSO ASTORIA, ORE

SURFACE WEATHER OBSERVATIONS

DATE FEB 11 1979

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

TYPE	TIME (LST)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Inches)	TEMP. (F)	DEW PT. (F)	WIND			ALTIM. ETER SET- TING (Inches)	REMARKS AND SUPPLEMENTAL CODED DATA
			SURFACE	TOBORN					DIRECT	SPEED	CHAR- ACTER		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
3A0000	M1000		3		L-F	152.45	45	21	07			999	21402 16//
3A0000	M1000	500	5		L-F	160.45	44	21	07			000	
3A0000	1500	500	6		F	160.45	44	00	00			000	INTMT L-
3A0000	1500	1500	3		L-F	162.45	44	21	03			000	10302 16// 45 20083
/	72791	82103	48515	16007	8600	16007	8600	07103	63151	51	70270	20083	449450
3A0000	1500	M3000	4		L-F	160.47	46	20	07			000	
3A0000	1500	M3000	5		L-F	160.47	46	19	08			000	
3A0000	1500	M4000	6		L-F	160.48	46	18	08			000	40001 16//
A0000	1500	F4000	5		L-F	160.48	46	17	06			000	
SP0837	1450	M7000	2		R-F			14	06			000	
P0847	1450	E1000	8					15	05			000	(FBI)
3A0000	1450	E1000	10			160.48	47	12	04			000	LERBIORE45
SP0943	1450	E6000	6		RW-			18	13			000	(FBI)
3A0000	1450	E6000	6		RW-	160.48	47	21	12			000	RB15 50006 17// 42
/	72791	82112	57856	16009	8720	16009	8720	08500	63151	51	70610	20055	448420
SP1013	1450	E14000	10					20	11			000	
3A1058	1450	E14000	12			158.50	47	18	12			000	RE05
3A1155	1450	E12000	15			154.50	47	18	14			999	
3A1258	1450	E12000	15			148.50	47	20	13			997	81200 18//
SP1315	1450	M8000	12					19	15	624		997	
SP1325	1450	M6000	4		L-F			20	14			997	
RS1357	1450	E7000	6		L-	149.50	48	20	14	622		997	LB20
3A1456	1450	M7000	10		R-	148.50	47	19	13			997	LERB45
SP1530	1450	1450	15					20	12			996	
RS1555	1450	M7000	12		R-	143.50	47	20	11			995	RE05050 80500 172/ 50
/	72791	82011	67608	14310	6732	14310	6732	08805	63134	70010	2-0011	450450	
3A1656	1450	M7000	10		R-	139.48	46	23	05			994	
3A1756	1450	M7000	5		R-E	136.49	47	22	12			983	
3A1856	1450	M7000	5		R-E	136.48	46	22	10			994	50526 17//
3A1956	1450	M7000	5		R-E	139.47	45	19	13			994	
3A2056	1450	M7000	5		R-E	138.47	45	18	06			994	
SP2133	1450	1450	5		R-F			19	08			994	
3A2156	1450	E2500	5		R-F	136.46	44	17	06			994	00063 172/ 50
/	72791	81706	58616	13804	3732	13804	3732	07000	63129	76370	20071	450450	
3A2256	1450	E2500	5		R-F	134.45	43	00	00			993	
3A2356	1450	E2500	4		R-F	129.45	43	07	05			991	

0110: 11 114M VV=00 PPTT N4C4C4 T4T4 67.00 P4P4 7RRR 0N4C4 9500000 2R24R24R24 3P4P4 M4M4 444P4 M4M4 474T4T4

STATION WSO ASTORIA, ORE

SURFACE WEATHER OBSERVATIONS

DATE FEB 22 1979

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

TIME	TIME	SKY AND CEILING (Number of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (Inches)	TEMP. PT. (F)	DIREC- TION (Kts)	SPEED (Kts)	WIND FACTOR (Kts)	ALTIT- UDE SET- TING (Feet)	REMARKS AND SUPPLEMENTAL CODED DATA
			SURFACE	TOWER								
11	12	37	10	100	51	6	17	9	10	110	111	113
A 0056		E35 OVC	10			051	38	37	09	07	965	605 1566
A 0156		E35 OVC	10			048	40	38	08	05	967	
A 0256		E35 OVC	10			048	39	38	08	06	967	
P 0339		R25 OVC	10						08	05	967	(E181)
A 0356		R SCT E25 OVC	10		RW-	048	40	38	05	06	967	RWD / 60300 1501 37
/	/	72791 80506	66802		04804	854	//	03603	63039		70010	44737 0
A 0456		E R BKN 35 OVC	10		RW-	048	39	38	05	05	967	
A 0556		M SCT E4 BKN WDR	10			044	39	38	07	07	966	REIS
A 0656		R SCT E35 BKN 40 BKN	15			044	37	36	09	06	966	60300 1500
P 0740		R SCT 200- BKN	15						07	08	965	(E181)
A 0756		R SCT 200- BKN	15			041	38	37	07	08	965	
A 0854		35 SCT 200 SCT	15			041	41	39	07	11	965	
A 0954		E55 BKN 90 BKN	15			041	44	39	07	08	965	60300 1878 37
/	/	200 BKN										
/	/	72791 60708	74028		04107	58478		04603	63032		70050	44437 0
A 1054		E45 BKN 90 BKN 200 OVC	12			038	45	38	12	07	964	RWD DNT E AND S
P 1132		M 25 BKN 45 OVC	12						06	05	963	RWD DNT SW
A 1155		10 SCT M25 BKN 45 OVC	15			034	45	39	10	06	963	
A 1254		18 SCT M22 BKN 45 OVC	15			027	48	41	09	11	961	714 15//
A 1355		18 SCT M25 BKN 45 OVC	15			024	47	38	09	12	960	BKN V SCT
P 1436		18 SCT 24 SCT M45 OVC	15						14	11	959	RWD DNT S-W
A 1455		30 SCT M45 OVC	15			021	47	38	10	10	959	RWD DNT SW-W
A 1553		M30 BKN 45 OVC	15			021	45	38	11	09	959	607 15// 48
/	/	72791 81109	74022		02107	85471	//	03607	63012		44837 0	
A 1657		23 SCT M41 OVC	15			024	44	38	14	08	960	R001E23
A 1756		18 SCT M30 OVC	10			022	43	37	06	06	960	R001E19 015 450
A 1857		20 SCT M32 OVC	10			024	42	40	08	05	960	CIG RGD / 30301 15//
A 1955		15 SCT M31 OVC	7		R-	024	41	40	05	03	960	R0018 CIG RGD
A 2055		15 SCT M35 OVC	7		R-	026	41	39	06	07	961	CIG RGD
A 2158		20 SCT M28 BKN	10			029	41	38	09	06	962	REIS / 30501 1500 48
/	/	72791 60706	66016		02105	65400		03305	63020		70110	24001 44837 0
A 2256		15 SCT M30 OVC	10			031	40	38	01	05	962	CIG RGD
A 2354		15 SCT M26 BKN	10			031	39	37	08	08	962	R001E47

SURFACE WEATHER OBSERVATIONS

WSO ASTORIA, ORE

[illegible]

FEB 27 1979

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

TIME (1)	TIME (2)	SKY AND CEILING (Thousands of Feet) (3)	VISIBILITY (Miles) (4)		WEATHER AND OBSTRUCTIONS TO VISION (5)	SEA LEVEL PRESS. (Inches) (6)	TEMP. (°F) (7)	DEW PT. (°F) (8)	DIREC- TION (°) (9)	SPEED (Kts.) (10)	CHAR- ACTER (11)	ALTIM- ETER SET- TING (Inches) (12)	REMARKS AND SUPPLEMENTAL CODED DATA (13)
			SURFACE (4a)	TOWER (4b)									
SA	0056	10 SCT M16 OVC	6		R-	171	43	41	19	15	621	204	73013 172/
SA	0156	10 SCT M16 OVC	6		R-	160	44	42	16	16	625	200	R- OCM R
SA	0256	M14 BKN 25 OVC	6		R	163	43	41	24	14	624	001	WSHET 20 FRDPA
RS	0356	4 SCT M14 OVC	5		R	163	42	40	23	09		001	50862 M11 42 20066
/	/	72791 82309	58636		K306	872	11	04	508	63154			76270 20066 44742 0
SA	0456	4 SCT E14 BKN 30 OVC	8			161	41	40	18	05		001	R026
SA	0556	4 SCT E14 BKN 30 OVC	8			163	40	40	09	04		001	
SA	0656	4 SCT M14 BKN 30 OVC	15		RW	163	40	39	10	07		001	50004 1911 *R048
SA	0756	4 SCT E14 BKN 30 OVC	15			173	40	38	02	10	620	004	R021 HVY CU ALGDS BKNVLS S-W
SA	0855	E14 BKN 22 BKN	12			175	42	39	14	06		005	14 BKN V SCT
RS	0954	14 SCT 22 SCT	12			178	43	40	14	06		006	CB RWK SE / 21505 1903 40
/	/	250 SCT											
/	/	72791 21406	69158		17806	29403		04	215	63159			70530 20069 44540 0
SA	1059	16 SCT 22 SCT	15			178	45	42	02	05		006	16 SCT V BKN
SA	1157	16 SCT 22 SCT	15			176	48	44	22	09		005	TCL ALGDS
SA	1257	14 SCT 250 SCT	15			171	49	40	23	11		004	CB DNT SW TCL ALGDS RWK DNT E, 807 1903
SA	1355	14 SCT 22 SCT 250 SCT	15			168	48	37	20	10		003	TCL ALGDS RWK S-SW
SA	1457	14 SCT 22 SCT 250 SCT	15			163	46	39	23	09		001	CB SW-NW AND DNT NE RWK W-NW TCL ALGDS
SA	1553	19 SCT 250 SCT	15			160	48	39	23	12		000	CB DNT NE TCL ALGDS RWK DNT NW, 712 1903 SQ
/	/	72791 22312	74150		16009	29403		04	712	63151			20069 45040 0
SA	1658	30 SCT	15			154	47	38	21	08		999	
SA	1757	CLR	15			149	44	37	18	05		997	TCL E
SA	1856	22 SCT	10			144	39	36	14	05		996	715 1200
SA	1956	22 SCT	10			138	36	35	13	06		994	
SA	2056	22 SCT E200 BKN	10			132	35	34	13	05		992	
RS	2156	E23 BKN 200 OVC	10			129	36	35	11	04		991	715 1408 50
/	/	72791 81104	66031		12902	64508		02	715	63120			20067 45035 0
SP	2250	20 SCT E40 OVC	10						11	05		989	
SA	2357	20 SCT E40 OVC	10			122	37	36	12	05		989	(F1B1)
SA	2457	20 SCT E5 BKN 200 OVC	10			117	37	35	08	05		988	

STATION

SURFACE WEATHER OBSERVATIONS

WSO ASTORIA, ORE

DATE **MAR 14 1979**

TO CONVERT LST TO GMT
ADD 8 hrs. SUBTRACT

PE	TIME (LST)	SKY AND CEILING (Hundreds of Feet)	VISIBILITY (Miles)		WEATHER AND OBSTRUCTIONS TO VISION	SEA LEVEL PRESS. (In.)	TEMP. (°F)	DEW PT. (°F)	WIND			ALTIM. ETER SET- TING (In.)	REMARKS AND SUPPLEMENTAL CODED DATA
			SURFACE	TOWER					DIRECT TION (°-M)	SPEED (Kts.)	CHAR- ACTER (In.)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Q	0056	11 SCT M14 OVC	10			195	49	46	22	05		011	108 15 //
A	0156	11 SCT M14 OVC	10			198	47	45	07	05		012	
A	0356	11 SCT M15 OVC	10			193	46	45	00	00		010	
A	0356	11 SCT M15 OVC	10			192	47	45	13	04		010	803 15 // Y6
/	/	72791 81304 66022	19208	854	//	07803	63183	47346	88	MIXED			
A	0456	11 SCT M19 OVC	10			188	45	44	09	04		009	
A	0556	10 SCT M18BKN250 OVC	15			187	44	43	17	04		008	
A	0656	M18BKN 100BKN180 OVC	15			187	43	42	12	04		008	605 1572
P	0734	15 SCT 200T E150 OVC	10						08	04		008	6008 ALQMS
A	0756	15 SCT 200T E150 OVC	10			187	46	44	07	03		008	6008 ALQMS
P	0842	M188KN 250 OVC	10						07	06		008	
A	0856	M189KN 250 OVC	12			187	49	46	04	07		008	
A	0956	M189KN 250 OVC	15			187	53	45	21	12		008	400 1508 43
/	/	72791 82112	74022	18712		75408	07400	63178	45343				
A	1057	M228KN 250 OVC	15			187	53	45	22	15		008	
A	1158	M228KN 75BKN 250 OVC	15			183	55	45	20	12		007	228KN V SCT
P	1218	22 SCT 75 SCT E230 OVC	15						16	12		007	ACLOS SE-SW
A	1256	22 SCT E75BKN 250 OVC	15			183	55	44	19	15	623	007	603 1578
P	1334	M26BKN 75BKN 250 OVC	15						21	14		005	
A	1355	M26BKN 75BKN 250 OVC	15			176	55	45	22	12	620	005	
A	1455	M26BKN 75BKN 250 OVC	15			173	56	45	21	13		004	ACLOS DINT NE-E
A	1555	M26BKN 250 OVC	15			173	55	45	18	14	624	004	610 1508 56
/	/	72791 81814	74022	17313		75508	07610	63164	45643				
A	1658	E25BKN 75BKN 2200 OVC	15			170	54	47	18	16	625	003	
A	1757	E20BKN 45 OVC	15			170	53	47	19	14	621	003	
A	1856	E16BKN 30 OVC	8		R-	170	51	49	18	12	620	003	R802 60300 15 //
A	1955	E17KN 35 OVC	6		R-	168	51	49	18	07		003	
A	2056	M22LKN 40 OVC	6		R-	168	50	49	16	05		003	
S	2157	75CT E20 OVC	4		R-F	170	50	49	18	06		003	50008 172/ 56
/	/	72791 81806	56116	17010		2732	09500	63161	70840	20008	45643		
A	2257	75CT E14BKN 35 OVC	4		R-F	170	48	47	22	08		003	
A	2356	65CT E11 OVC	4		R-F	165	48	47	22	06		002	

APPENDIX E

WIND, SEA AND SWELL OBSERVATIONS FROM
LIGHTSHIP COLUMBIA AT APPROXIMATE TIMES OF BAR TRANSITS

SOURCE: S. Noble, U.S. Army Engineer District,
Portland, Personal Communication

**WIND, SEA AND SWELL OBSERVATIONS
FROM LIGHTSHIP COLUMBIA
AT APPROXIMATE TIMES OF BAR TRANSITS**

CORRESPONDING VOYAGE NUMBER	DATE	TIME (PST)	WIND		SEA		SWELL		
			DIRECTION (°T)	SPEED (knots)	HEIGHT (1/2-meters)	PERIOD (sec)	DIRECTION (°T)	HEIGHT (1/2-meters)	PERIOD (sec)
8	1 Nov 78	1300	310	22	1	2	270	3	6
9	4 Nov 78	1000	50	10	0	0	270	3	6
10	9 Nov 78	0400	40	15	0	0	270	3	6
10	9 Nov 78	0700	50	20	1	2	270	3	6
11	10 Nov 78	1300	360	22	1	2	270	3	6
11	10 Nov 78	1600	60	16	1	2	270	2	6
12	28 Nov 78	1300	180	15	0	0	240	2	7
13	3 Dec 78	0400	190	17	1	1	270	2	7
13	3 Dec 78	0700	180	25	2	5	240	3	7
14	4 Dec 78	1600	340	27	2	4	290	4	6
15	15 Dec 78	0400	270	11	0	0	270	5	6
15	15 Dec 78	0700	260	9	0	0	270	5	6
16	17 Dec 78	1300	160	12	2	3	270	6	7
16	17 Dec 78	1600	140	5	1	3	270	5	7
17	30 Dec 78	0100	70	16	1	5	280	2	7
18			---NO DATA---						
19									
20									
21	24 Jan 79	0700	90	12	0	0	270	2	7
22	28 Jan 79	0400	60	15	0	0	300	4	6
22	28 Jan 79	0700	50	12	0	0	280	3	5
23	7 Feb 79	2200	160	12	0	0	250	3	6
23	8 Feb 79	0100	150	13	1	4	250	3	6
24	11 Feb 79	1000	180	18	1	N/A	230	3	7
25	22 Feb 79	2200	80	16	1	3	280	2	6
26	27 Feb 79	1300	220	9	0	0	240	3	6
27			---NO DATA---						
28	22 Mar 79	0400	90	9	0	0	300	2	7
29	23 Mar 79	0700	70	10	0	0	330	2	7
29	23 Mar 79	1000	10	8	0	0	300	2	7

APPENDIX F

TIDE HYDROGRAPH AND RIVER DISCHARGE FOR EACH BAR CROSSING

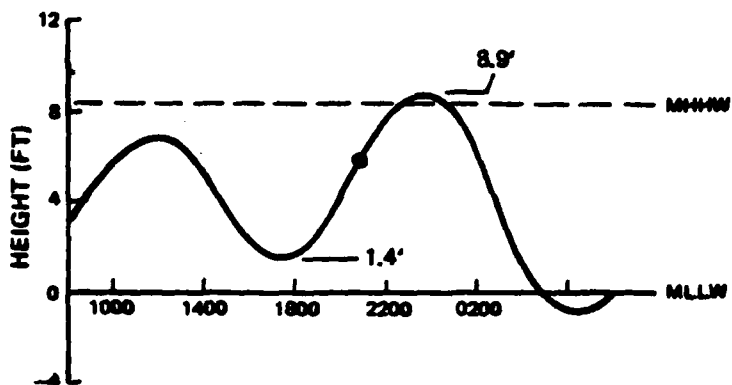
- SOURCES:
1. Observed Tide Heights from National Ocean Survey (NOAA) Gauge at Astoria, Oregon
 2. River Discharge Records for Vancouver, Washington from J.C. Huetter, Acting Chief, Engineering Division, U.S. Army Engineering District, Portland, 25 May 1979, Personal Communication.

Tide hydrographs for voyages occurring in 1979 will be included when the observed tide height data is made available from NOAA.

VOYAGE NO. 1

**TIDE HYDROGRAPH FOR
20 - 21 MAY 1978**

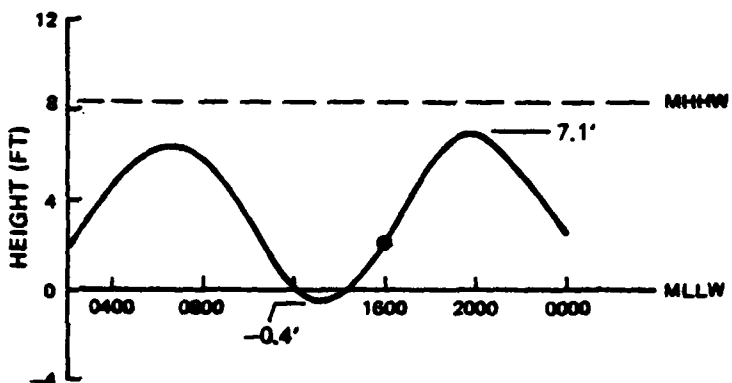
RIVER DISCHARGE = 232,000 CFS



VOYAGE NO. 2

**TIDE HYDROGRAPH FOR
29 - 30 MAY 1978**

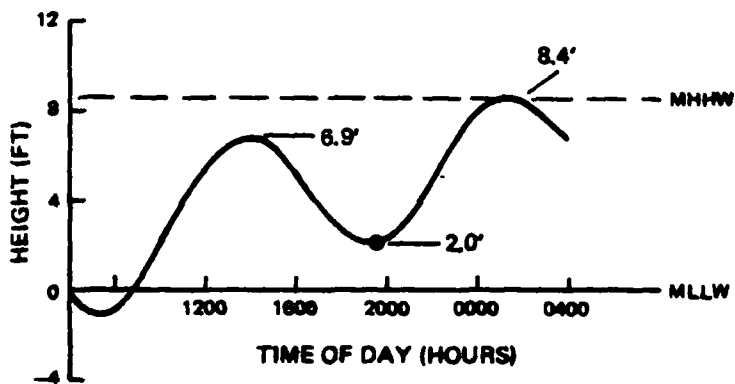
RIVER DISCHARGE = 210,000 CFS



VOYAGE NO. 3

**TIDE HYDROGRAPH FOR
5 - 6 JUNE 1978**

RIVER DISCHARGE = 219,000 CFS

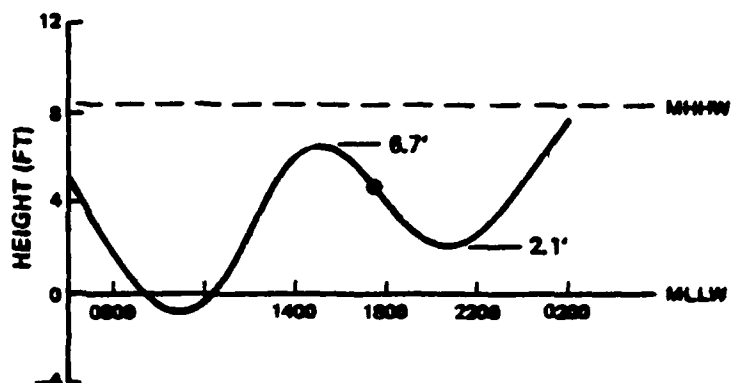


● INDICATES APPROXIMATE MID-POINT OF BAR CROSSING

VOYAGE NO. 4

TIDE HYDROGRAPH FOR
7 - 8 JUNE 1978

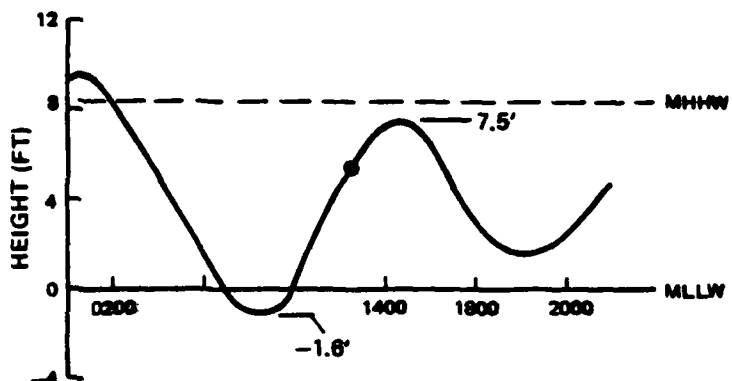
RIVER DISCHARGE = 217,000 CFS



VOYAGE NO. 5

TIDE HYDROGRAPH FOR
21 JUNE 1978

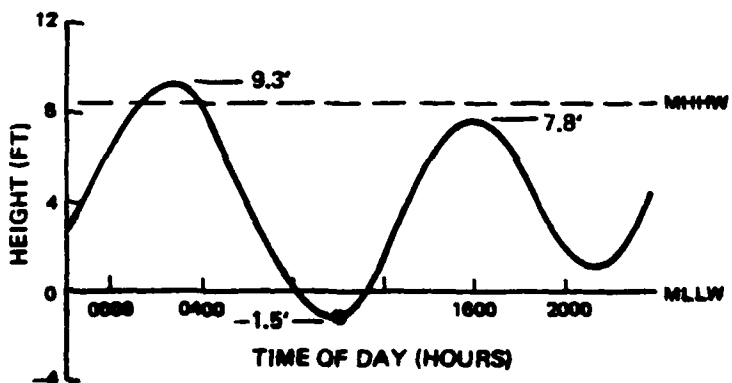
RIVER DISCHARGE = 247,000 CFS



VOYAGE NO. 6

TIDE HYDROGRAPH FOR
22 - 23 JUNE 1978

RIVER DISCHARGE = 219,000 CFS

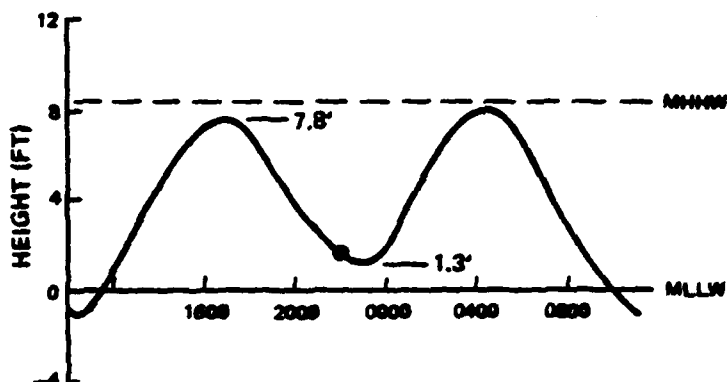


● INDICATES APPROXIMATE MID-POINT OF BAR CROSSING

VOYAGE NO. 7

TIDE HYDROGRAPH FOR
24 - 25 JUNE 1978

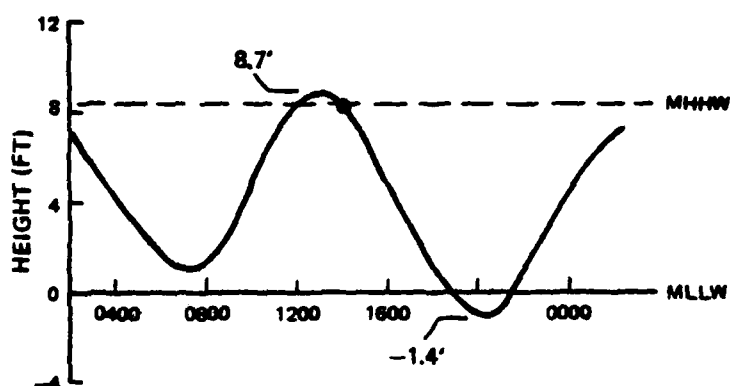
RIVER DISCHARGE = 214,000 CFS



VOYAGE NO. 8

TIDE HYDROGRAPH FOR
1 - 2 NOVEMBER

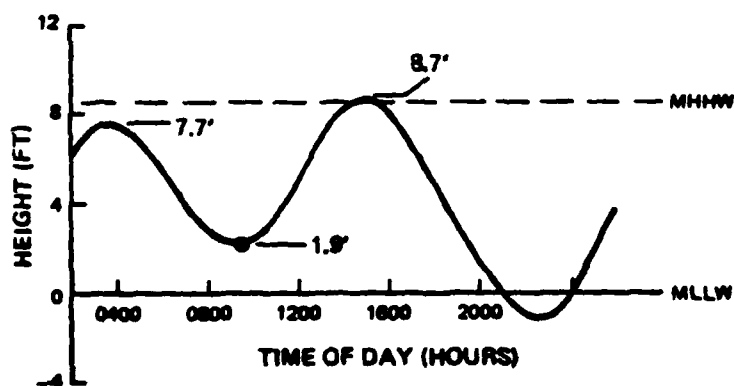
RIVER DISCHARGE = 139,000 CFS



VOYAGE NO. 9

TIDE HYDROGRAPH FOR
4 - 5 NOVEMBER 1978

RIVER DISCHARGE = 168,000 CFS

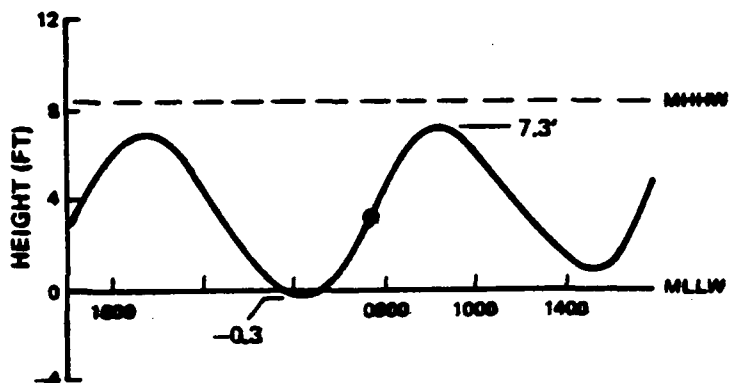


● INDICATES APPROXIMATE MID-POINT OF BAR CROSSING

VOYAGE NO. 10

**TIDE HYDROGRAPH FOR
8 - 9 NOVEMBER 1978**

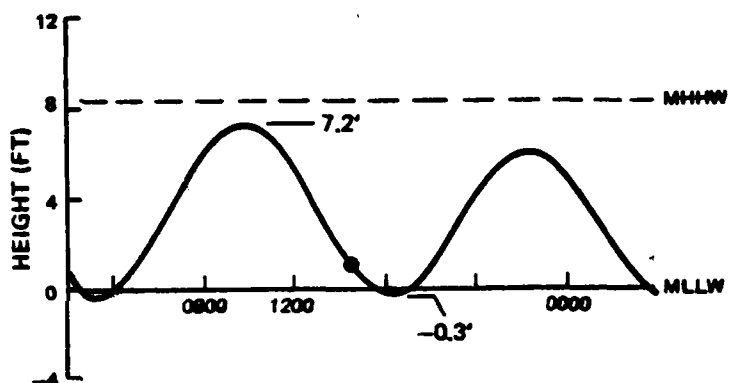
RIVER DISCHARGE = 113,000 CFS



VOYAGE NO. 11

**TIDE HYDROGRAPH FOR
10 - 11 NOVEMBER 1978**

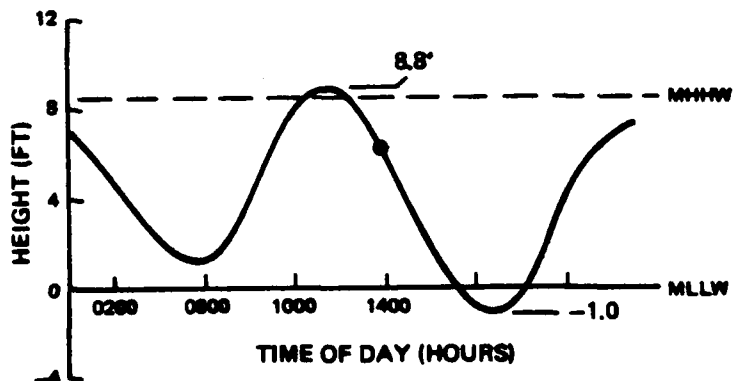
RIVER DISCHARGE = 118,000 CFS



VOYAGE NO. 12

**TIDE HYDROGRAPH FOR
28 - 29 NOVEMBER 1978**

RIVER DISCHARGE = 190,000 CFS

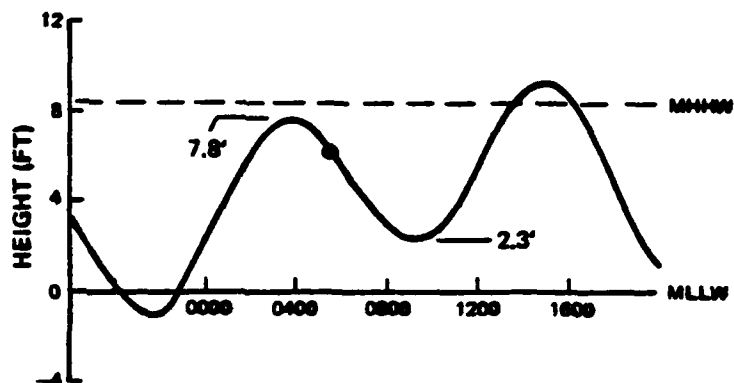


● INDICATES APPROXIMATE MID-POINT OF BAR CROSSING

VOYAGE NO. 13

TIDE HYDROGRAPH FOR
2 - 3 DECEMBER 1978

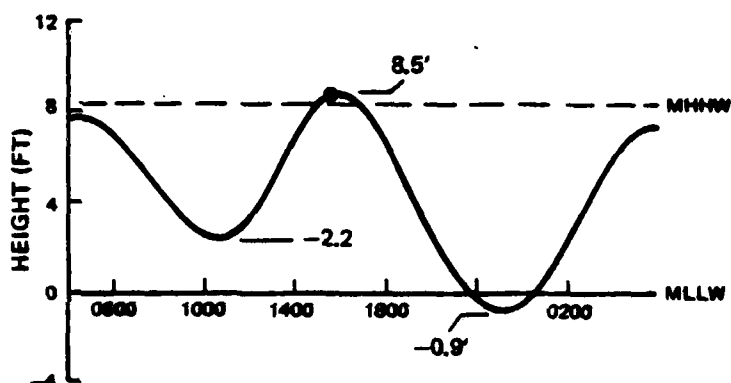
RIVER DISCHARGE = 208,000 CFS



VOYAGE NO. 14

TIDE HYDROGRAPH FOR
4 - 5 DECEMBER 1978

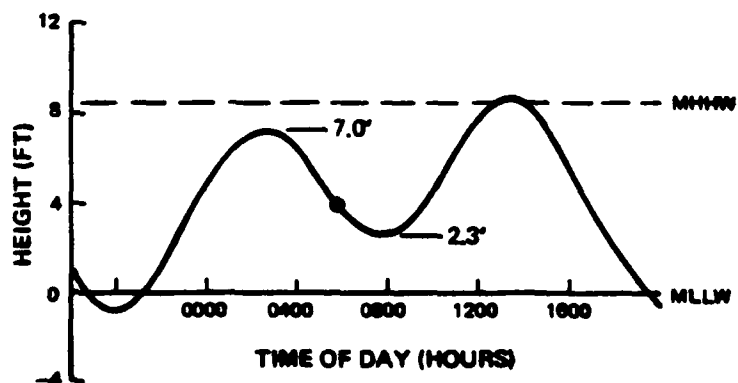
RIVER DISCHARGE = 198,000 CFS



VOYAGE NO. 15

TIDE HYDROGRAPH FOR
14 - 15 DECEMBER 1978

RIVER DISCHARGE = 211,000 CFS

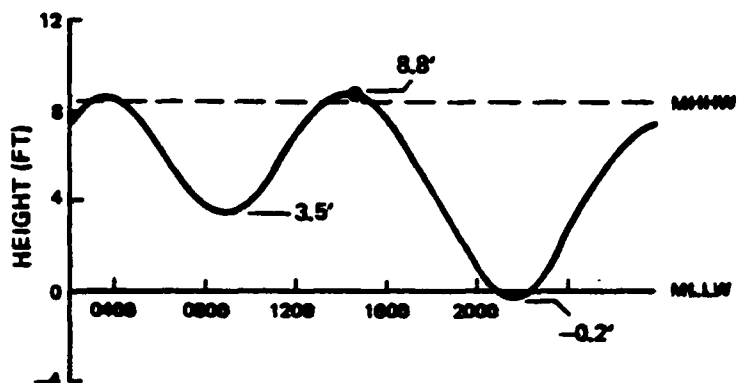


● INDICATES APPROXIMATE MID-POINT OF BAR CROSSING

VOYAGE NO. 16

**TIDE HYDROGRAPH FOR
17 - 18 DECEMBER 1978**

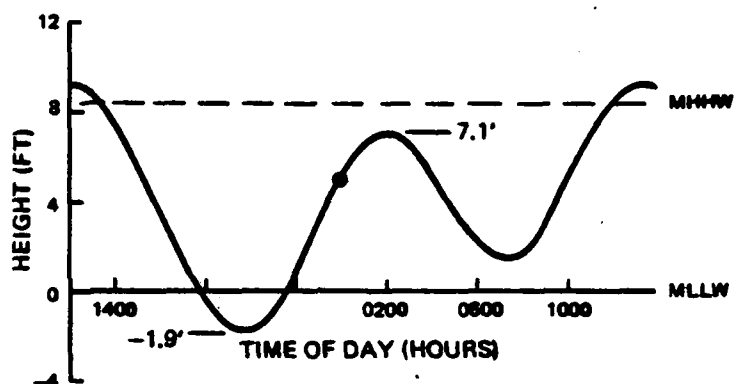
RIVER DISCHARGE = 195,000 CFS



VOYAGE NO. 17

**TIDE HYDROGRAPH FOR
29 - 30 DECEMBER 1978**

RIVER DISCHARGE = 217,000 CFS



● INDICATES APPROXIMATE MID-POINT OF BAR CROSSING

APPENDIX G
SAMPLE DATA SHEET FROM VOYAGE NO. 9

Voyage 9
Recorder C
Page 1 / 10

VOYAGE NO. 9

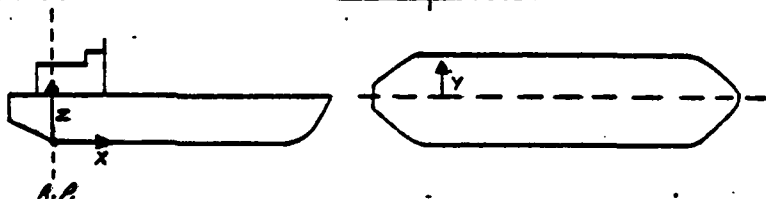
I. VOYAGE DESCRIPTION

Route: From WILL BRIDGE To RICHMOND
Dates: Depart 1515 3 Nov/78 Arrive 2345 5 NOV.
Time Zone Description PST (ZD+8)
Tt Personnel CRAIG LEIDERSDORF CHRIS BUTCHER

II. VESSEL DESCRIPTION

Name CHEVRON WASHINGTON Type OIL CARRIER
Captain STEVE ALEXANDER LBP 625'0"
LOA 651'4" Breadth (Molded) 96'0"
Draft: Fwd 27'0"
Aft 30'0"
Mean 28'6" Displacement 36,385 LT

III. CG AND SENSOR LOCATIONS



	X	Y	Z	COMMENTS
Motion Sensor	103.4'	+8.75'	100.7'	ON CHART TABLE BHD.
Mini Ranger R/T	93.8'	+1.25'	128.5'	ON AFT RAILING OF 125 PLATFORM ON RADAR MAST
Fathometer Transducer	596'	-	-	TRANSDUCER NEAR BOW
LCB (from Hydrostat Data)	324.4'	-	-	
LCG (computed)	318.9	-	-	
VCG (computed)	-	-	22.6	

IV. BAR CROSSING

Date 4 November 1978 Time 0856 - 0919
Bar Pilot CAPT K McALPIN (No. 11)
Pilot's Opinion of Crossing EASY

Voyage 9
Recorder 2
Page 2/10

TRANSIT LOG

Begin 0856 4 Nov/78 End 0919

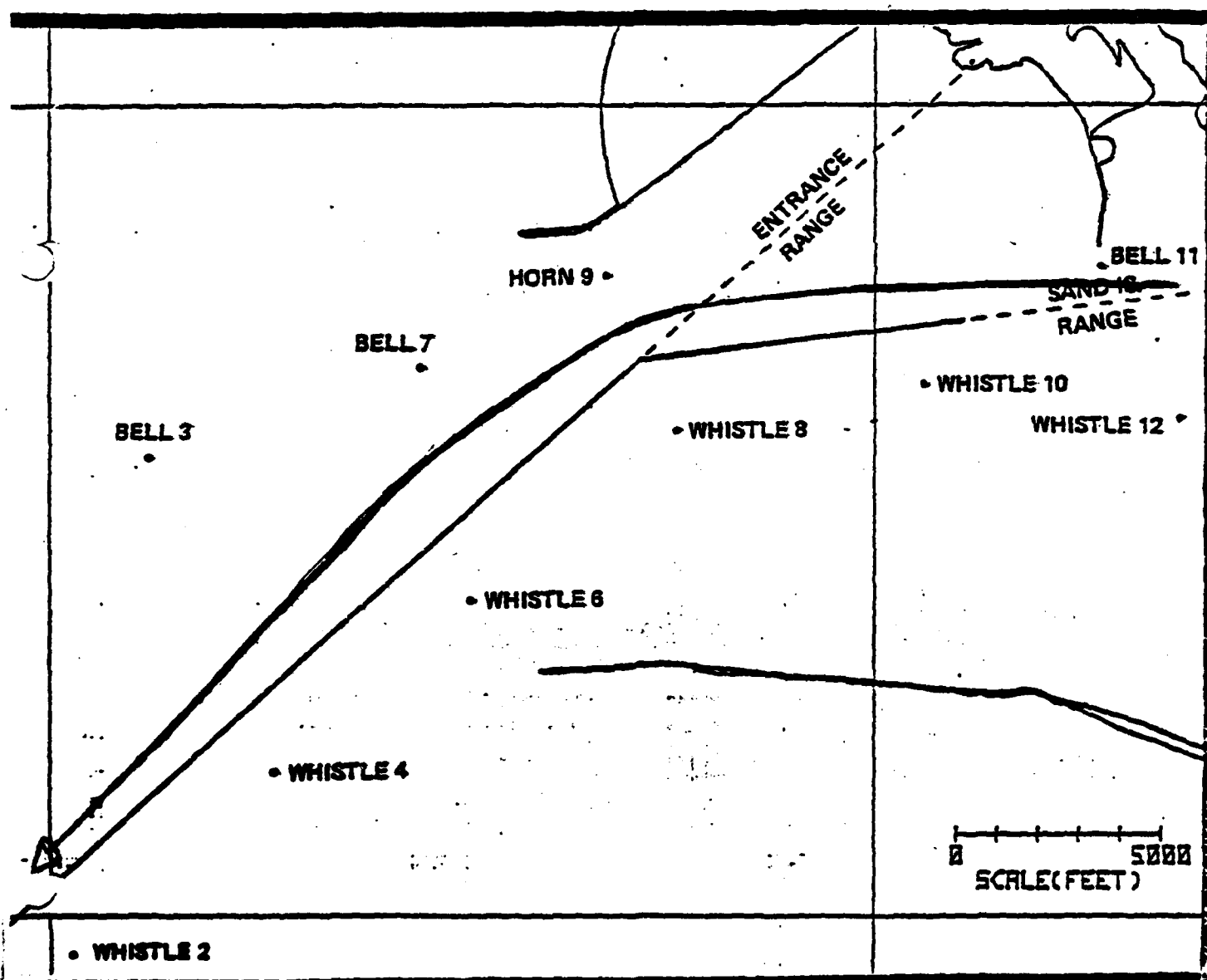
Bar Pilot Capt. K. Mc ALPIN (No. 11) Opinion of Crossing EASY

Cassette:

Number 1 Side A

Start 033 Stop 071

Intended Track:



Voyage 9
Recorder CE
Page 3/10

OBSERVATIONS

I. TIDES

	<u>Time</u>	<u>Elevation (ft)</u>	<u>Time</u>	<u>Elevation (ft)</u>
Astoria(Tongue Point)	<u>0927</u>	<u>+2.4 Low</u>	<u>1519</u>	<u>+8.7 High</u>
Correction	<u>-1^h10^m</u>	<u>+0.1</u>	<u>-0^h46^m</u>	<u>-0.7</u>
Entrance(North Jetty)	<u>0817</u>	<u>+2.5 Low</u>	<u>1433</u>	<u>+8.0 High</u>
Corrections on Astoria:	High Water	<u>-0^h46^m</u>	<u>-0.7 ft.</u>	
	Low Water	<u>-1^h10^m</u>	<u>+0.1 ft.</u>	

II. TIDAL CURRENTS

	<u>Time</u>	<u>Current (Kt)</u>	<u>Time</u>	<u>Current (Kt)</u>
Grays' Hbr. Entrance	<u>0628</u>	<u>2.4 EBB</u>	<u>0922</u>	<u>SLACK</u>
Correction	<u>+0^h20^m</u>	<u>x 1.5</u>	<u>+0^h05^m</u>	<u>-</u>
Entrance (Buoy No. 12)	<u>0648</u>	<u>3.6 EBB</u>	<u>0927</u>	<u>SLACK</u>
Corrections on Gray's Hbr.	Slack Water	<u>+0^h 05^m</u>		
	Max. Current	<u>+0^h 20^m</u>	Flood Ratio 1.4	Ebb Ratio 1.5

III PRE-RUN OBSERVATIONS

Time: 0850
Weather: FAIR
Temperature: 48°F Visibility: UNLIMITED
Wind: NW 10-15 KNOTS
Sea State: Seas: NW WIND CHOP Swell NIL
1-2'

IV. POST-RUN OBSERVATIONS

Time: 0935
Weather: FAIR
Temperature: 56°F Visibility: UNLIMITED
Wind: NW 15 KNOTS
Sea State: Seas: NW Swell W/NW
2-4' 10-12'
10 sec

Voyage 9
Recorder CB
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OBSERVATIONS DURING RUN

NOTE: Observations are to be recorded approximately every 2 minutes or when course and/or speed changes or other noteworthy events occur.

TIME	SHIP					EVENT / COMMENT
	Course °T	Speed Kts	Pitch/RPM Ft/RPM	Hummer G+no (or)		
START 0856	275	14.2	16	278.8	3.8W	-----
0858	265	14.5	16	272	7W	-----
0900	253	14.8	16	258	5W	-----
0903	255	13.8	15	258.5	3.5W	-----
0905	230	—	—	235.4	5.4W	-----
0907	227	13.1	15.5	231.8	4.8W	-----
0909	220	13.2	15.5	222.4	2.4W	-----
0911	221	12.7	15	223	2W	-----
0913	218.5	12.4	15.5	219	1.5W	-----
0915	222	12.0	15	224.9	2.9W	-----
0918	220	13.1	15	221.8	1.8W	-----
STOP 0919 05.						-----

01- 1 16' TO PORT 3.2' AFT OF CENTERLINE OF HULL

Voyage 1Recorder 4Page 5 / 10

INSTRUMENT CHECK & CALIBRATION

	Pre-Run	Post-Run	Comments
I. TAPE HEADS			
Clean HP Tape Head	✓	-	
Clean Qantex Tape Head	✓	-	
II. PITCH			
Level	/	/	
+45° (Down by Bow)	/	/	
-45° (Down by Stern)	/	/	
III. ROLL			
Level	/	/	
+45° (To Port)	/	/	
-45° (To Starboard)	/	/	
IV. HEAVE			
Rest	/	/	
Positive Acc. (Up)	/	/	
Negative Acc. (Down)	/	/	
V. HEADING			
Time	0842	0930	Ship's Gyro Deviation: 1.2° E
Gyro (°T)	315.5	161.9	
Corrected Ship's Gyro (°T)	315.5	169.0	
Deviation	-0-	1.9° W	Drift Rate: 1.9° in 40m = 0.04°/minute West
VI. MINI RANGER			
Byte Test Card Check	✓	/	New Station @ Cape D. Lanes OK
VII. SYSTEM TEST			
Record on Qantex & Playback	/	/	
VIII. OBTAIN COURSE/RUDDER ANGLE RECORD		/	
IX. OBTAIN FATHOMETER RECORD		/	

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VOY #9 PRE RUN CHECK

Pitch= 000.0deg
Roll=-000.8deg
Accel= 1.003Gs
Hdng= 255.7deg
A Rng=??????yds
B Rng=??????yds
Time: 00:07:21

Pitch= 045.5deg
Roll= 008.6deg
Accel= 1.003Gs
Hdng= 255.4deg
A Rng=??????yds
B Rng=??????yds
Time: 00:07:37

Pitch=-045.2deg
Roll=-002.9deg
Accel= 1.003Gs
Hdng= 255.3deg
A Rng=??????yds
B Rng=??????yds
Time: 00:07:52

Pitch= 001.1deg
Roll= 044.7deg
Accel= 1.005Gs
Hdng= 254.9deg
A Rng=??????yds
B Rng=??????yds
Time: 00:08:16

Pitch=-002.9deg
Roll=-046.1deg
Accel= 1.003Gs
Hdng= 254.8deg
A Rng=??????yds
B Rng=??????yds
Time: 00:08:24

Pitch= 001.1deg
Roll=-011.4deg
Accel= 1.628Gs
Hdng= 253.8deg
A Rng=??????yds
B Rng=??????yds
Time: 00:09:16

Pitch= 014.9deg
Roll= 012.2deg
Accel=-0.295Gs
Hdng= 253.5deg
A Rng=??????yds
B Rng=??????yds
Time: 00:09:29

VOYAGE # 9

PRE RUN EQUIPMENT CHECK

VOY #9 GUNTER PLAYBACK
PRE RUN

Pitch= 000.0deg
Roll=-000.8deg
Accel= 0.999Gs
Hdng= 246.8deg
A Rng=??????yds
B Rng=??????yds
Time: 00:14:30 BOT

Pitch= 000.0deg
Roll=-000.9deg
Accel= 1.003Gs
Hdng= 246.2deg
A Rng=??????yds
B Rng=??????yds
Time: 00:15:27 BOT

VOY #9 TAPE PLAYBACK
PRE RUN

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POST RUN CHECK VOYAGE#9

Pitch= 001.1deg
Roll= 000.8deg
Accel= 0.942Gs
Hdng= 189.2deg
A Rng=016742yds
B Rng=014136yds
Time: 09:39:05

Pitch= 045.6deg
Roll=-002.2deg
Accel= 0.994Gs
Hdng= 189.4deg
A Rng=016742yds
B Rng=014364yds
Time: 09:39:40

Pitch=-044.9deg
Roll=-001.9deg
Accel= 1.059Gs
Hdng= 189.0deg
A Rng=016742yds
B Rng=014444yds
Time: 09:39:54

Pitch=-001.6deg
Roll= 044.8deg
Accel= 0.961Gs
Hdng= 189.1deg
A Rng=016742yds
B Rng=014506yds
Time: 09:40:04

Pitch= 000.8deg
Roll=-045.4deg
Accel= 1.003Gs
Hdng= 188.7deg
A Rng=016742yds
B Rng=014553yds
Time: 09:40:11

Pitch=-005.6deg
Roll= 000.4deg
Accel= 1.814Gs
Hdng= 189.5deg
A Rng=016999yds
B Rng=014645yds
Time: 09:40:25

Pitch= 015.2deg
Roll= 025.6deg
Accel=-0.807Gs
Hdng= 189.9deg
A Rng=016999yds
B Rng=014683yds
Time: 09:40:30

VOYAGE #9

POST RUN EQUIPMENT CHECK

EDITED TAPE RESULTS

VOYAGE# 9

4 scans at
090945

6 scans at
090946

4 scans at
090947

6 scans at
090948

4 scans at
090949

6 scans at
090950

4 scans at
090951

file mark

POST RUN TAPE RUN BACK
VOYAGE# 9

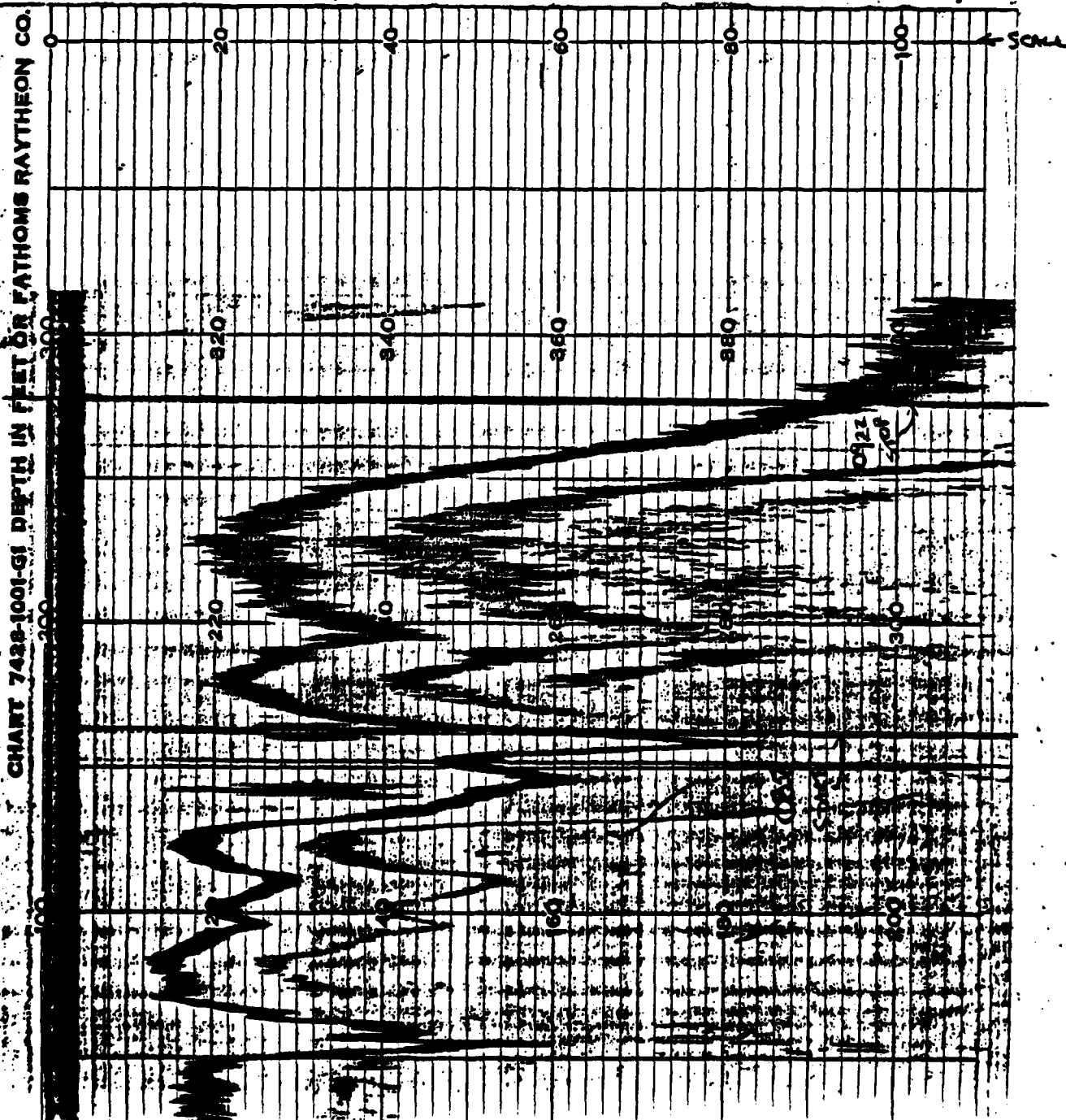
Pitch= 000.1deg
Roll=-000.9deg
Accel= 1.003Gs
Hdng= 279.0deg
A Rng=009278yds
B Rng=002490yds
Time: 08:56:00

Pitch= 000.4deg
Roll= 000.5deg
Accel= 0.968Gs
Hdng= 216.1deg
A Rng=015345yds
B Rng=009855yds
Time: 09:19:02

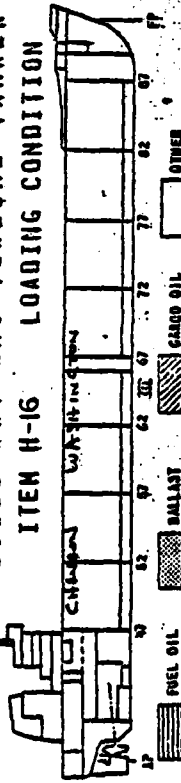
EOT

FATHOMETER RECORD VOYAGE No. 9

SOUNDINGS IN
FT. BELOW KEEL



35000 DWT GAS TURBINE TANKER
ITEM H-16 LOADING CONDITION



LOAD CONDITION: BALLAST

NOTES:

LENGTH BETWEEN PERPENDICULAR IS 635.00 FT.
LUNGSION LAYERS ARE FROM MIDSHIP (+ FWD).
VERTICAL LAYERS ARE FROM MOLDED BASELINE.
WYFS IN FT-TONZ.
F. S. CORR = Σ WYFS/0.0156.
 ρ = LIQUID DENSITY IN GAL./TON. SEE NOTES ITEM F-5.
IN VALVE COLUMN INDICATE OTHER SLICER VALVE IS OPENED (O) OR SHUT (S).

DATE	TIME	TEMP	WIND	WAVE	SEA	WIND	WAVE
7/3		-0-	-0-	427.5	-0-		
7/3		-0-	-0-	472.1	-0-		
7/3		230.8	358.1	419.8	28.2		
7/3		312.9	356.2	457.3	20.1		
7/3		-0-	-0-	-0-	-0-		
7/3		211.9	345.6	457.3	24.2		
7/3		-0-	-0-	418.2	-0-		
7/3		-0-	-0-	471.9	-0-		
TOTAL		956.7	3687.6		94.575		

CONSTRUCTION

ITEM	UNIT	TOTAL	WCS	WM	LCR	LM	WHS
AVIATION FUEL 9/8	✓	695	23.6	2052.6	-228.6	-166.07	
U. S. G. C. F. FINE	FOOT	93	30.4	2927	-264.9	-2501.7	
COFFEE WATER		100	41.8	4284.4	-316.5	-3332	1410
WATER		12.8	46.0	569	-295.0	-3729	
TOTAL		708.8		28604.4		-20815	

TANK	DEPTH	TOWS	NO. 8	NO.	LCG	LTA	VNF3
FORE PEAK	-0-	-	-	-	4282.2		2-5.5
NO. DEEP	-0-	-	-	-	4253.9		
1 P/S	1524	19.6	10554.4		4228.3	35701.6	
2 P/S	1942	17.4	12720.9		4211.5	35053	
3 P/S	1501	2.4	11408.4		4119.3	32348	
4 P/S	1501	8.4	11408.4		4077.3	36028.3	
5 1/2	1203	26.0	13318		4023.4	34255.4	
6 P/S	1811	17.4	34625.4		3.0	501	
6 P/S	2063	14.4	35214.2		37.6	741	
7 P/S	2081	17.4	34824.4		115.3	2206.4	
8 P/S	1325	17.6	32342		171.4	219.4	
0 1/2	-0-	-	-	-	214.7	-0-	
10 1/2	576	15.5	4425		242.7	71295.2	
AFTER PEAK	-0-	-	-	-	391.0		
TOTAL	16049		44235			24013.9	

SUMMARY

ITEM	\$ FULL	TONS	YCB	WM	LC3	LS	Y:55
CARGO	9551		105784			5865	
BALLAST	15587		221385			3405	
CONSUMABLES	9068			28503		1065	
SPECIAL TOTAL		176.9	39.50	0.075	-155.8	-37.113	1.102
TOTAL GWT							
LIGHT SHIP	10,039.0	31.72	319,937		-20.43	-237.17	--
TOTAL DISPA.	24,362.2	22.4	240,223			116.61	

CO		DRAFT OF FP	NUT
CC		DRAFT OF AP	CE
RAIN LEVER		HEAD DRAFT	CITY (UNCCR.)
TRIM			F.S. COAR.
		GMT REQ'D	GMT